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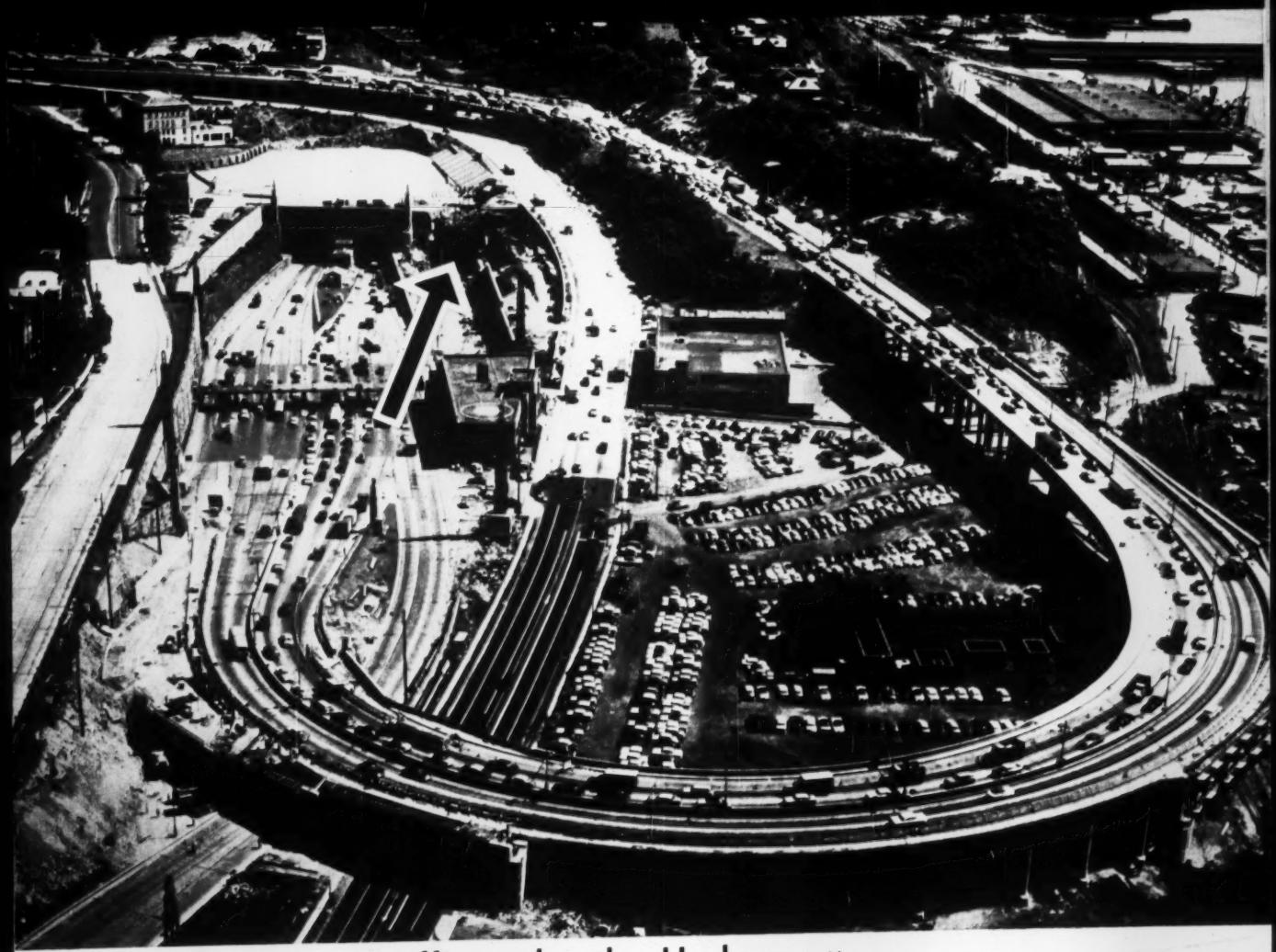

Funneling more traffic under the Hudson p. 46

UNIVERSITY MICROFILMS INC
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A McGRAW HILL PUBLICATION

While improving highway design, construction ...get MAXIMUM safety!

Armco FLEX-BEAM Guardrail protects danger spots on the West Virginia Turnpike.

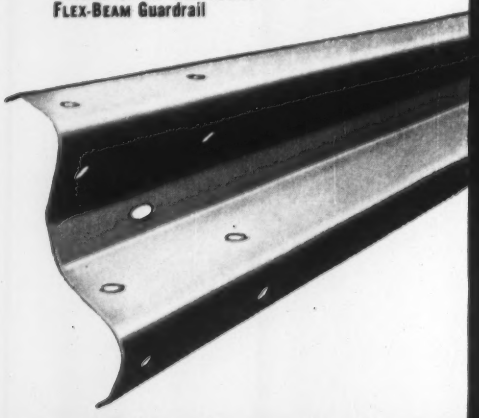
Engineers are making today's highways straighter, smoother, wider for safer and easier driving. And just to make sure, many engineers are installing Armco FLEX-BEAM Guardrail to provide **maximum** safety at highway danger spots.

This sturdy, beam-type steel guardrail with controlled flexibility helps minimize property damage—often saves lives. Beam strength extends through the joints to help control vehicles and prevent dangerous pocketing. And FLEX-BEAM has just the right amount of flexibility to cushion the shock of impact. At night, FLEX-BEAM is a visual barrier that increases driver confidence.

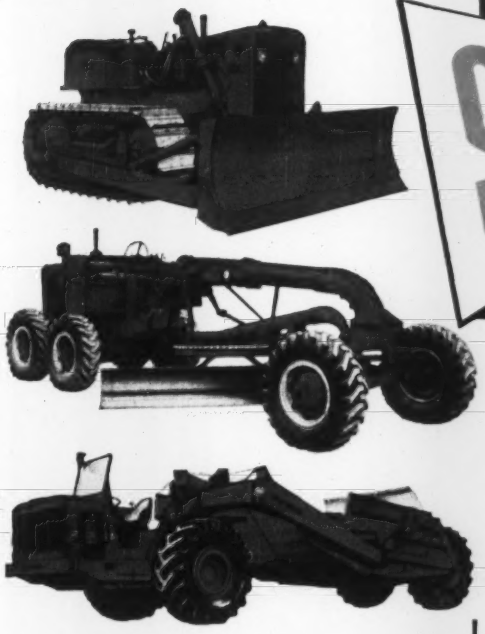
What about acceptance? Armco FLEX-BEAM Guardrail has been installed on roads and highways all over the country for the past 17 years. Today, it is used on nine major expressways in as many states.

Installation is a cinch. Sections of FLEX-BEAM are joined by nine bolts, one of which fastens the sections to posts of any material. Work goes fast, even on curves. Write for more details. Armco Drainage & Metal Products, Inc., 3586 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Section of the new Armco FLEX-BEAM Guardrail



Armco
FLEX-BEAM
GUARDRAIL



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That's why your Allis-Chalmers dealer puts so much importance on good preventive maintenance practices . . . encourages you to take full advantage of his modern servicing facilities.

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Parts made in the same factory, to the same rigid specifications as original equipment, are your assurance of getting top performance and long life. Treated, packaged and sealed against rust and dust, True Original Parts are stocked in quantity by each dealer to give you quick service close to your job.

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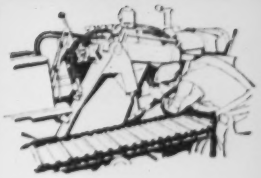

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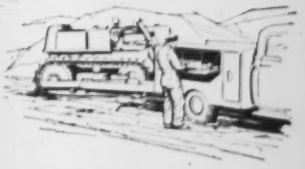

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Robert F. Boger
Publisher

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This 2,680′ Bridge River, British Columbia, penstock was built by B. C. Electric. Of 75⅝″ O. D. steel pipe, it is Dresser-Coupled in 40′ lengths with maximum slope of 39½°. Uncovered except for one intermediate tunnel, it tested completely leakproof at 1000 psi.

6 ft. 3 and TROUBLE-FREE at 1000 psi

B. C. Electric installs 4th Dresser-Coupled penstock

Convinced of the advantages of Dresser Couplings, the B. C. Electric Company, since 1948, has installed four 100 per cent Dresser-Coupled penstocks at Bridge River, British Columbia. On all four projects, the use of Dresser Couplings resulted in faster completion of the line and assured permanently tight, maintenance-free joints. This meant earlier revenue from plant operation . . . uninterrupted service to power consumers.

Throughout the world, leading engineers and contractors recognize the superiority of the Dresser pipe joining method — permanent tightness, flexibility, simplicity, strength and economy.

Even highest pressure penstocks are faster and easier to install when Dresser Couplings are used. The need for special skills and expensive equipment is minimized. In many cases, a field crew of a few men can cut construction time from months to weeks through the use of Dresser Couplings. Work proceeds in any weather with wrenches the only tools needed.

Where required, high tensile steel permits thinner pipe walls and lower pipe weights. This means easier handling. In some cases, up to 25 per cent in weight is saved.

But a Dresser-Coupled penstock's most important advantage is permanence . . . it stays bottle-tight for life. The resilient gaskets built into every coupling assure positive sealing, eliminate expansion-contraction problems, permit joint deflections so the penstock may follow the natural contour of the right of way.

For your next penstock project, send for helpful, interesting engineering data on the successful and varied Dresser-Coupled steel penstock installations. Write Dresser Manufacturing Division, Bradford, Pa.

ONE OF THE DRESSER INDUSTRIES

Panoramic view of outlet works at Wyoming's Glendo Dam, part of the Greater Missouri River Basin project. North Platte River is in upper right of picture.

Du Pont Blasting Team goes dam building on the North Platte

BLASTER primes 40% Red Cross Extra dynamite with MS-25 Delay Cap. MS Delays improve fragmentation . . . reduce backbreak.

FIRING THE BLAST with CD-48 Blasting Machine eliminates need for generators or permanent power lines for blasting . . . permits consistent firing of up to 1,200 caps in parallel series.

EXCELLENT BREAKAGE resulting from Du Pont Blasting Team shot.

. . . helps build Wyoming's 3,000,000-cu.-yd. earth-filled Glendo Dam

For farms and factories of the West, water is the life-blood—vital to the growth of crops and generation of primary power. With the North Platte River as donor, the U. S. Bureau of Reclamation is giving the eastern Wyoming-western Nebraska area a vast transfusion. Eight hundred thousand acre feet of irrigation water and 24,000 KW of electricity will be available when the Glendo Dam project is completed.

Excavating the ground for the dam's outlet works is an important part of the project, especially since a portion of the displaced material is used to form the bulk of the dam. For this job, the Lytle-Green Construction Company of Sioux City and Des Moines, Iowa, selected a Du Pont Blasting Team—and are well satisfied with the result. The team—40% Red Cross Extra® Dynamite, MS Delay Electric Blasting Caps and CD-48 Blasting Machine—works together smoothly to produce shot after shot of well-broken rock.

It's a typical example of the tasks Du Pont Blasting Teams perform, the places they go. You can receive the same dependable performance wherever your blasting operations are located. Just ask the Du Pont Explosives representative in your section to help choose one to meet your specifications. E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

DU PONT EXPLOSIVES

Blasting Supplies and Accessories

DU PONT

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BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

B.F.Goodrich

How All-Purpose tires save 25% on tire costs for concrete company

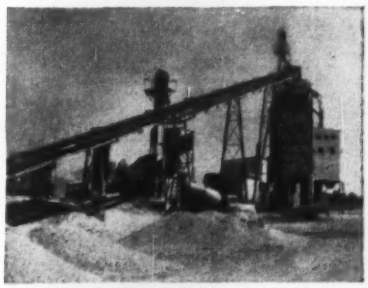
HAMILTON CONCRETE PRODUCTS, INC. manufactures and delivers all types of concrete block and cast stone in Chattanooga, Tenn. Delivery trucks work 10 hours a day, 6 days a week, must travel over rocky, rutted construction roads. Tires could be quickly chewed to pieces, skyrocketing costs.

But not at Hamilton. This company uses B. F. Goodrich All-Purpose tires, reports they give 15% more mileage than other makes. And because these tires can be recapped, the company *saves 25% on tire costs.*

B. F. Goodrich builds the All-Purpose with a tread that's up to 67% *deeper* than that of a regular tire. This extra, tough rubber defies rock cuts. Curved cleats give positive pulling power in forward or reverse. And in sizes 8.25 and larger 2 extra breakers guard against shocks and bruises.

For really rugged jobs, choose *all-nylon* All-Purpose tires. Nylon withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. This B. F. Goodrich tire body outwears even its extra-thick tread, *can be recapped over and over!*

Why not see your B. F. Goodrich retailer today and find out how BFG off-the-road tires can reduce your costs. Tires are available in *all-nylon* or rayon construction (both types with nylon shock shield which gives more recaps). *The B. F. Goodrich Company, Tire & Equipment Division, Akron 18, Ohio.*



AURORA REDI-MIX Concrete Co., N. Aurora, Ill., has tried other tires, but has standardized on BFG tires because they cut costs per mile.

ALL-PURPOSE TIRES give more original mileage, more recap mileage, for N. E. Finch Co., crushed rock hauler of East Peoria, Illinois.

Specify B. F. Goodrich tires when ordering new equipment

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

Your B. F. Goodrich retailer is listed under Tires in the Yellow Pages of your phone book

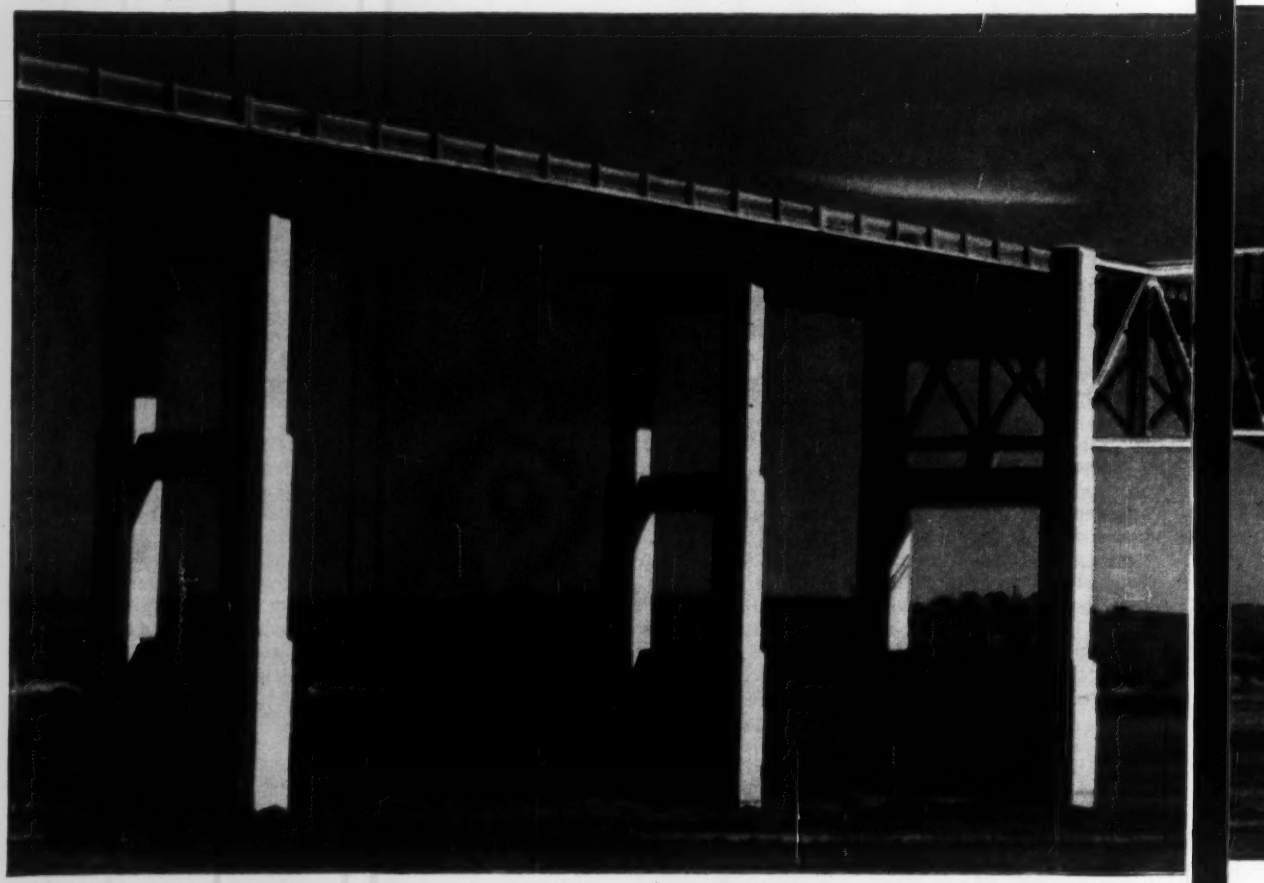
Saved- $250,000 - by using

THE recently completed Columbia River Bridge at Umatilla, Oregon, is another excellent example of the savings that can be realized by reducing weight of bridge construction by the proper use of USS High Strength Steels.

This 3,380 ft. double cantilever structure consists of two 600 ft. main spans, two 300 ft. anchor arms, and one 120 ft. central suspended span plus fifteen plate girder spans of 90 and 100 ft.

1,452 tons of USS TRI-TEN "E" Steel were used in the truss spans and 412 tons in the plate girder spans. This total of 1,864 tons of TRI-TEN "E" represents more than half of the steel involved in the superstructure. (Carbon structural steel was used in the remainder.)

The decision to use TRI-TEN "E" Steel in the most highly stressed members was predicated on comparative estimates of weight and costs for both carbon structural steel and High Strength Steel. As made by the Tudor Engineering Company, engineers and designers, these design comparisons showed that



USS HIGH STRENGTH STEELS

—the big step forward in bridge construction

USS TRI-TEN "E" Steel in superstructure

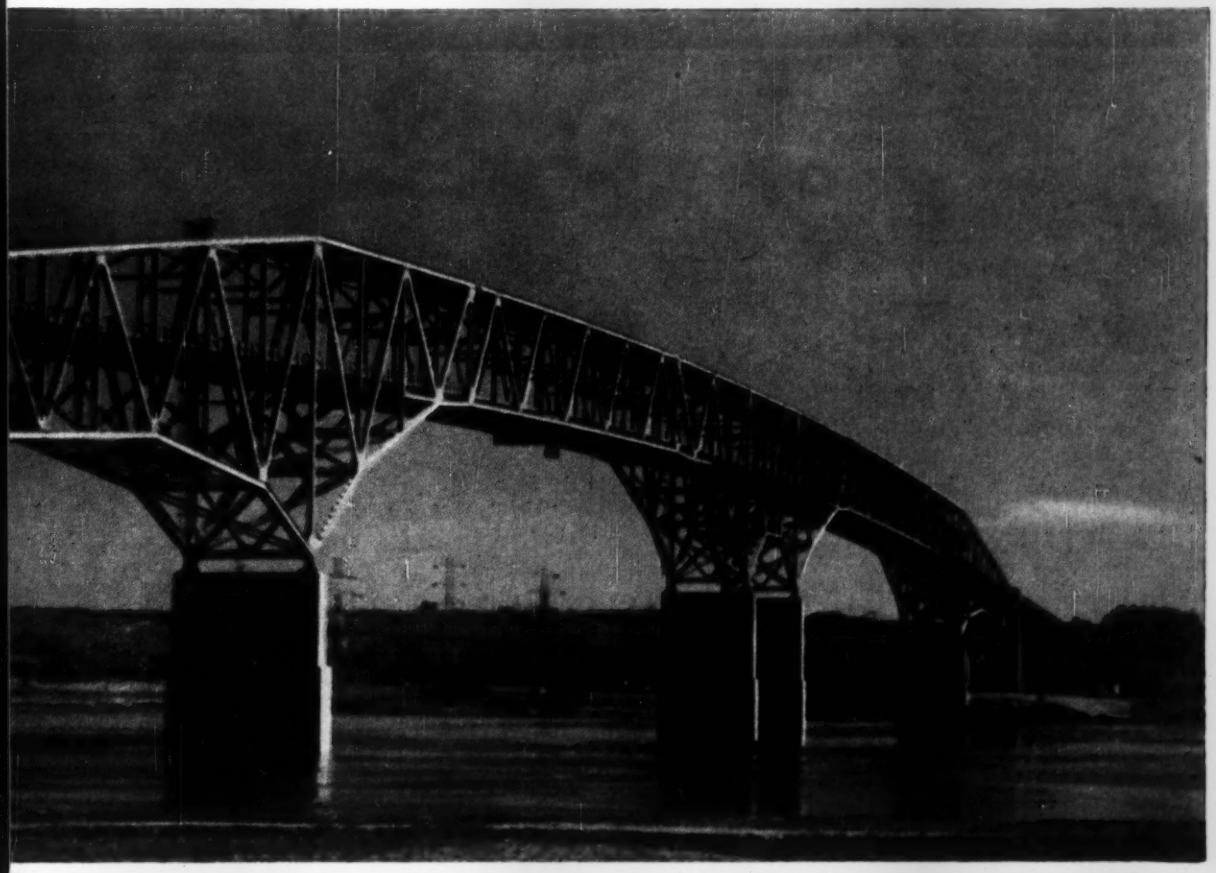
on the basis of cost installed, USS TRI-TEN "E" Steel used in place of carbon steel would result in a potential savings of 15% of the cost of the superstructure.

This saving of some $250,000 was made possible because of the weight saved by using TRI-TEN "E" Steel in lighter sections—which not only meant that a smaller tonnage of steel was required for the job but also materially reduced steel transportation costs.

And here's something to bear in mind. The substantial cost reduction made on this Umatilla Bridge by substituting High Strength Steel for carbon steel involves a bridge structure in which only slightly more than half the total steel tonnage used was of High Strength Steel.

For more information on our High Strength Bridge Steels, write to Room 5144, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

Owner — Umatilla County, Oregon. Designed and engineered by Tudor Engineering Company. Structural steel fabricated and erected by American Bridge Division, United States Steel.



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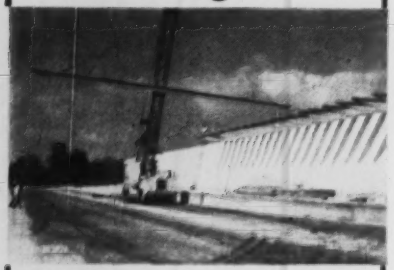
USS

UNITED STATES STEEL

There's Something NEW In Building . . . .



LEAP Pre-Stressed concrete tee joists in this Mayflower warehouse give long, clear spans with no truss supports or posts to take up valuable space.

It's LEAP Pre-Stressed Concrete Roof Slabs & Tee Joists!

The "new look" in building these days features **LEAP** pre-stressed concrete tee joists and **LEAP** Double Tee roof slabs for maximum strength, quick, economical construction, and post-free spans up to 60 feet to afford full use of valuable floor space from wall to wall!

LEAP pre-stressed concrete products may be used exposed for a modern architectural effect—and at great savings in construction costs! A typical crew can erect and place 10,000 square feet of roof slabs per day!

Strength of concrete in all **LEAP** pre-stressed products is extremely high. Compressive strength is a minimum of 5,000 psi, running as high as 6,000 psi on some designs—about twice the strength of average concrete used in building construction today!

LEAP pre-stressed concrete products are widely used in schools, commercial and industrial buildings where a low cost, permanent, modern roof of high strength over long spans is desired . . . mail the coupon below for full details at no obligation—let this be your **"LEAP"** year for low cost, highest quality building! (**LEAP** franchised casting yards are located in principal cities.)

FRANCHISES AVAILABLE IN SOME LOCALITIES—WRITE FOR DETAILS

LEAP CONCRETE
P. O. Box 495, Lakeland, Florida

Please send me details about **LEAP** Pre-Stressed concrete.

NAME .....
FIRM .....
CITY .....
STATE .....

Reader Comment

Package Deals

SIR—Your October 13th issue carried an interesting article on Cabot, Cabot & Forbes Co., Boston, Mass. One statement especially interested us. On page 53 in the paragraph headed "Competition", your writer states: "There are several other developers who make a practice of offering package deals. However, no other firm appears to have reached the point where all the elements of its package are completely under its control."

We thought you might like to learn about Sherrill-Noonan, a York, Pa. build-lease firm which has arranged for engineering, construction, financing, and leasing of more than 25 industrial projects. A couple of years ago, when many other areas were suffering from a decline in industrial activity, and unemployment was increasing, the York, Pa. area was building new plants and enjoying an industrial boom. Much of the credit for this can be given to Sherrill-Noonan.

BILL SCHURR
Philadelphia, Pa.

How to Join Precast Units?

SIR—Your article regarding the far-transported prestressed beams for an Alaska bridge (ENR Nov. 10, p. 42) is a valuable one in many respects, not the least of which is its comparison of the cost of a 70-ft prestressed beam with that of a 70-ft steel beam. Many times the sensational "savings" effected with prestressed concrete result from the competing steel span being two or three times as long. There are indications of such a temptation here, but it was bravely resisted.

The fact that the precast bridge slabs are designed "to act compositely with the girder for live load" is itself a notable one for which Angwin and McMinn and the Bureau of Public Roads are to be congratulated. This is a further step in the pioneering work along these lines, which the thinking of McMinn initiated a number of years ago and was first expressed in the Baker Lake Bridge in Oregon. The fact is that precast slabs can be made to work compositely with precast or prestressed-beam stems. This application is practical elsewhere—not only in Alaska, but everywhere.

The necessity, in this type of construction, for connecting precast concrete beams and precast slabs focuses attention—and stresses—on the joints. There is the joint between beam and slab, there are the joints, longitudinal and transverse, between adjoining slabs. What are the simplest and best forms of such joints?

Are shear keys, so standard and so habitual as to be specified almost without thinking, really worth the trouble and expense they entail to install and keep clean?

Is it really necessary to thicken the slab at transverse joints between adjoining panels? True, the Book of Rules says thicken them, but cannot these slab margins be adequately strengthened otherwise?

Are joints directly over beams necessary, or can some other forms of connection perform, if not quite so effectively, yet sufficiently well?

These are all questions that invite serious thought and interest; for to eliminate shear keys and thickened edges, to make the field work as clean and simple as possible, are highly desirable lesser improvements if they can be accomplished.

HOMER M. HADLEY
Consulting Engineer
Hadley & Hadley
Seattle, Wash.

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Thin Shell Would Be Better

Sir—In the article on circular lift-slabs (ENR, Nov. 10, p. 34), you state that the lift-slab method is not common for single-story structures, but I believe that many of the original structures built by this method were only one-story, and that some eight-story apartment blocks in Calgary, Alberta, Canada, are to be the first "multi-story" structures of such height to be constructed.

A more glaring error, perhaps, would be the apparent waste of concrete in the roof slabs.

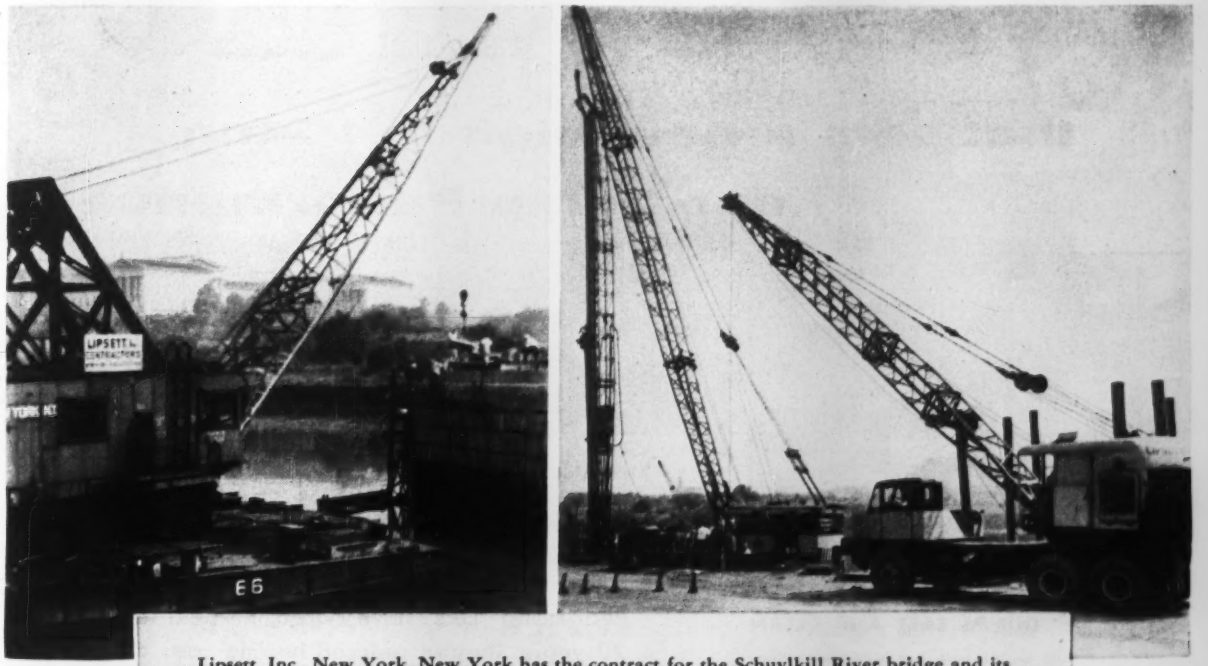
A circular design seems to lend itself to thin-shell construction: Assuming a 60-psf live load, a shell no more than 3 in. thick could readily be cast on the ground, and one ring of nine columns at, say, 25-ft radius could

(*Continued on page 12*)

GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling

on Schuylkill River Expressway Project



Lipsett, Inc., New York, New York has the contract for the Schuylkill River bridge and its approaches for the Schuylkill River Expressway, which will connect with the Pennsylvania Turnpike near Philadelphia, Pennsylvania. Gulf products are keeping this contractor's modern equipment operating efficiently on the job.

IT'S a faster, smoother job when equipment delivers top performance—and the use of quality petroleum products is one of the best guarantees of that kind of performance.

That's why leading contractors, like Lipsett, Inc., select Gulf as their supplier. They have found that Gulf quality lubricants and fuels provide an extra margin of protection against mechanical delays . . . and they appreciate Gulf's prompt delivery service and helpful petroleum engineering counsel.

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Gentlemen:

Please send me a copy of your new brochure, "Gulf and Your Business."

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Here's the New R-15 "Euc"

that sets a new high in 15-ton Rear-Dump Performance!

DUMPS FAST AND CLEAN

Smooth body interior and tapered rear chute assures clean shedding of the load well back of the rear wheels—an important feature for dumping into hoppers or over the edge of waste banks. Lycoming Silica Sand Co. in Pennsylvania has used 15-ton "Eucs" for years and now has added two R-15 Rear-Dumps to their hauling fleet.

STAY ON THE JOB LONGER

Victorville Lime Rock Co. in California uses 2 Model R-15 "Eucs" for hauling rock and overburden. Rugged body and frame withstand the impacts of loading, hauling and dumping heavy excavation in construction, mine and quarry service.

Built for heavy off-the-highway service, 15-ton Rear-Dump "Eucs" have paced the field for over 20 years. They've reduced hauling costs on hundreds of the toughest jobs in mine, quarry and construction work . . . delivered "plus" performance year in and year out.

This model R-15 incorporates the engineering advances, the easy operation and maintenance features, resulting from unequalled field experience with other Euclid Rear-Dumps of the same capacity. It provides the dependable work-ability that means more payloads per day at lowest cost per ton or yard moved.

Have your Euclid dealer give you full details on this new 15-ton Rear-Dump and the complete line of Euclid earth moving equipment. He'll be glad to show you why so many users have proved for themselves that *Euclids are your best investment.*

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

The R-15 is your BEST BET for Lower Hauling Costs!

Advanced design results from 20 years of leadership in building off-highway Rear-Dumps

Some of the* OUTSTANDING FEATURES *of the R-15

- 10½ yd. body 30,000 lb. payload
- 218 h. p.
- loaded top speed of 25 m.p.h.
- hydraulic booster steering
- air assist clutch
- free floating springs
- 14.00 x 24 drive tires (16.00 x 25 optional)

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Double-acting 3 stage Euclid hoist and hydraulic system gives the operator fast, positive control of the body position at all times. Dumping angle of the body, in fully raised position, is 68°. Body, frame and hoist are designed and built as an integral unit. McDowell & McDowell are using six R-15 "Eucs" to haul heavy excavation at a big plant site job in Nashville, Tennessee.

SPEED AND STABILITY

The 5 speed transmission and Euclid planetary axle provide a top speed of 25 m.p.h. with full 15 ton payload . . . 27 m.p.h. with 16.00 x 25 tires. Free floating Euclid spring suspension gives maximum stability empty or loaded under all road conditions . . . permits faster safe travel speeds. Dale Bloom had a fleet of 6 Rear-Dump "Eucs" on this Kansas Turnpike job—2 of them the Model R-15.

EASY OPERATION

Full width cab offset to left for maximum vision, air assist clutch, booster steering, 218 h.p. engine, fast acting hoist, free floating springs and fully adjustable seat contribute to driver comfort and easy operation. Four of these new Rear-Dumps worked on a highway relocation job of W. J. Menefee Construction in Missouri.

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GM POWER FOR YOU

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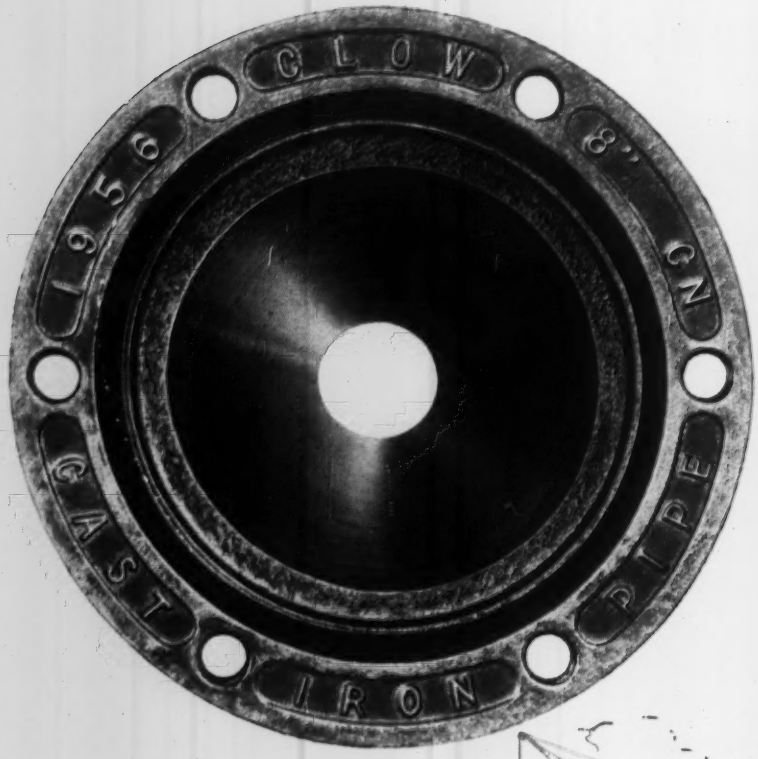

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Clow mechanical joint cast iron pipe is your logical choice for piping water underground. It is easy and economical to install, and can be depended upon for safe, trouble-free, permanent service.

Clow cast iron pipe exceeds the physical requirements of all currently approved specifications. Pipe foundries at Coshocton, Ohio and Birmingham, Alabama. Emergency stocks at Chicago, Dallas, and Oskaloosa, Iowa.

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. . . Reader Comment

support this total loading of 96 psf, serving the same purpose as the 18 columns used to support 180 psf due to the 10-in. roof slab.

The indirect result of the saving in concrete with a thin shell would be a saving in steel columns, and also in the foundations.

To find fault with such an original architectural design was not my intention, but if we are to use "lift-slab" to its greatest advantage, we should try to combine it with all other modern methods of design and construction whenever possible.

Gordon M. Rose
Chief Designer
W. V. Zinn & Associates
Toronto, Ont.

Egypt's High Dam

SIR—Having spent a good many years in Egypt before coming to England on my present job, I read with great interest the report on Egypt's High Dam (ENR Nov. 24, 1955, p. 67), and particularly noted the statement: "At present the waters of the Nile are controlled by a system of small dams and barrages, but their design is such that they cannot handle the heavy amount of silt that comes down during the August floods."

The facts are that the barrages on the Nile are meant solely to regulate the water distribution into the main canals. Including the present Aswan Dam, they have an impounding capacity varying between 2,000,000 and 4,000,000 acre-ft. During the flood when the flow reaches the catastrophic figure of 1,000,000 acre-ft per 24 hours, the dams are used to impound the excess over the maximum safety flow and thus avert the flooding of the Nile Valley. The reservoirs are then emptied during the ebbing of the flood in order to scour the beds of the reservoirs, which are then filled at the end of the flood when the proportion of silt in the water is light, as with their present total capacity these reservoirs can impound only a very small part of the total amount of waters carried during one flood.

This procedure has helped to keep the Aswan Reservoir unsilted, a condition which I believe is unique in reservoirs.

All sluices are opened during flood time not because of the silt but because the flow is such that it must be given the largest river section at the barrages and dams if the waters are not to overflow the Nile banks.

When the High Dam is built, its capacity will be such as to impound the total volume of several floods. The

Do you save money when you by-pass your distributor?

Offhand . . . you might say you save money when you buy direct from manufacturers.

Experienced purchasing men would tell you that this kind of "bargain" is heavily booby-trapped, that low prices at the expense of your local distributor are often very costly to the buyer.

Sure, it's great at first . . . buying major items direct from the maker. But direct buying has a way of snowballing . . . the buyer finds himself in a widening spiral that includes the direct buying of more and more items . . . and then they're anything but bargains. For the savings effected by direct buying are more than swallowed up by extra man-hours needed to handle the volume of paper work it entails, to say nothing of extra shipping costs and warehousing expenses. Add to that the loss of the competent on-the-spot advisory service your local distributor gives you, and you'll agree that it would take far more than the modest saving you'd realize to compensate for the total cost of such purchasing.

We are convinced that it is advantageous to *both* the buyer and seller to have products go through a distributor. By minimizing the manufacturer's sales and distribution costs, by providing a "department-store for industry" to supply *all* purchasers, by giving services that only a local organization can provide efficiently, we are convinced that today's distribution pattern—from maker to local distributor to user—is the most effective and economical it is possible to devise.

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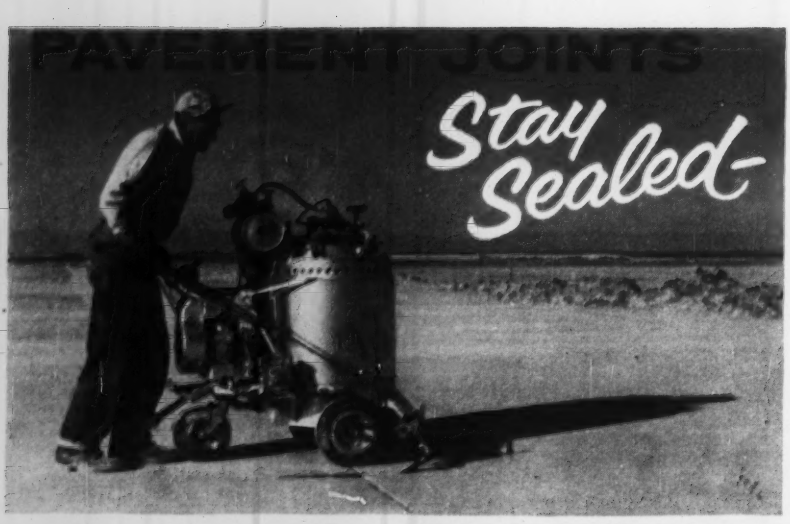

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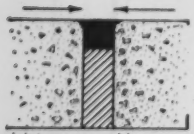
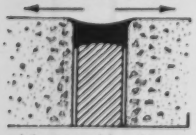


Joint compressed in warm weather temperatures.



Joint opened in sub-zero temperatures.

Hot poured Para-Plastic is the *original* hot poured rubberized asphalt joint sealing compound. It forms a resilient, adhesive and effective plastic which maintains bond at sub-zero temperatures. Superior characteristics of adhesion and cohesion, together with its stability under extremes of temperature make hot poured Para-Plastic the most effective, joint sealing material available.

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Servicised hot poured Para-Plastic JF is a specially compounded material with all the stability, plasticity and sealing characteristics of regular Para-Plastic, and in addition is unaffected by jet fuel and solvents. It is used for sealing pavement joints on airport runways, taxi strips and aircraft parking aprons.

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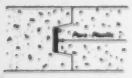
For sealing keyed construction or contraction joints in vertical walls. Maintains bond with concrete at temperatures to sub-zero. Simple installation insures a moisture-tight seal of the joint.



Keyed construction joints in vertical walls and horizontal slabs.

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. . . Reader Comment

perennial flow for irrigation will be regulated through the turbines, diversion tunnels and overflows. Then, the silt will help to render the Rock Dam perfectly impervious but will also be deposited over the bed of the reservoir decreasing slowly its capacity.

It is perhaps worth mentioning that Mr. Daninos of Egypt had this project in mind since before 1914, and it is to the credit of the present government that they have pursued its study with such vigor for its ultimate realization.

S. Akerib
Braithwaite & Co. Engineers Ltd.
London

Wind-load Formula

Sir—We were interested in the article "Concrete Skyscraper Designed for Hurricane" in ENR Dec. 8, p. 39. Using the formula given for a specific problem of 100-ft height and 130 mph, we obtain an answer of 5.4 psf, which leads us to inquire if the formula as published is correct.

E. A. Shelton
Continental Oil Company
Ponca City, Okla.

[Editor's Note: In the formula, the fractional exponent applies to (h/30) and not just (h).]

CALENDAR

American Society of Heating and Air-Conditioning Engineers, annual meeting, Sheraton-Gibson Hotel, Cincinnati, O., Jan. 23-25.

National Association of Home Builders, annual convention-exposition, Conrad Hilton and Sherman Hotels, and the Coliseum, Chicago, Ill., Jan. 22-26.

Engineers Joint Council, general assembly, Hotel Statler, New York, N. Y., Jan. 26-27.

Associated Equipment Distributors, annual meeting, Conrad Hilton Hotel, Chicago, Ill., Jan. 29-Feb. 2.

Mason Contractors Association of America, annual convention, Hotel Kentucky, Louisville, Ky., Feb. 5-8.

Architectural Division, Porcelain Enamel Institute, winter conference, Sheraton Hotel, Chicago, Ill., Feb. 8-9.

Society of American Military Engineers, annual technical meeting, Palmer House, Chicago, Ill., Feb. 9-10.

Association of Asphalt Paving Technologists, annual meeting, Hotel Cleveland, Cleveland, O., Feb. 13-15.

Associated General Contractors of America, national convention, Waldorf-Astoria Hotel, New York, N. Y., Feb. 13-16.

American Society of Civil Engineers, National winter convention, Baker Hotel, Dallas, Texas, Feb. 13-17.

American Concrete Institute, annual convention, Bellevue-Stratford Hotel, Philadelphia, Pa., Feb. 20-23.

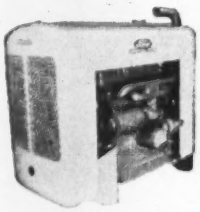
American Concrete Pipe Association, annual convention, Broadmoor Hotel, Colorado Springs, Colo., March 6-10.

"FORD POWER STARTS QUICKLY

hangs on to heavy loads — doesn't hesitate a bit!"

says FREDERICK VOLK, Fox Point, Wis.

"We handled approximately 60 cubic yards in close quarters with the clam shell in about three hours work. We were digging a drainage trench for a 42" culvert and had to go around various obstacles including trees and a 12-ft. fence to swing the clam over with the load. I like the Ford power of this Hydrocrane because it starts quickly—hangs on to heavy loads and it doesn't hesitate a bit!"



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It will pay you to specify Ford engines on your next piece of equipment because Ford is the only industrial engine manufacturer to offer modern Short Stroke design in a *full line* of overhead-valve 4-, 6- and 8-cylinder engines. These engines cut piston travel and piston speed which reduce friction and wear. The result is more usable power and extended engine life. This means you get jobs done quicker and more economically.

Right down the line . . . from the 134- and 172-cu. in. 4-cylinder engines . . . to the powerful 6-cylinder 223-cu. in. engine . . . and the big heavy-duty V-8's of 272 and 332 cu. in. displacement, you'll find Ford engines are years ahead in engineering. Engines that are designed to give power-packed performance more economically and for a longer period of time.

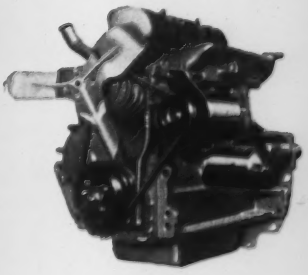
Autothermic pistons help maintain proper piston-to-wall clearance and prolong engine life.

Large overhead valves of high chrome-nickel alloy improve volumetric efficiency, resist warping.

Free-turn intake and exhaust valves reduce the possibility of valves sticking, help maintain compression longer.

Iron Alloy sleeves are centrifugally cast for better heat transfer and wear characteristics plus longer cylinder wall life.

FORD "172"



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At Waterbury, Conn., this Lock Joint Reinforced Concrete Cylinder Pipeline, undermined by flood waters, gave trouble-free service, alleviating a critical water shortage.

Although sections of this 48" Lock Joint water supply line for Hartford, Conn. were uncovered by the flood, it continued to give satisfactory service.

The destiny of England once hung on Wellington's "thin, red line" at the Battle of Waterloo. Daily your community's safety from fire and epidemic depends, to a large degree, on its water supply and sewage lines.

When the backwash of Hurricane Diane inundated western New England, the many Lock Joint installations in the area stood firm. These lines, in some cases the main source of water supply or of sanitary sewage disposal, continued to give trouble-free service even when uncovered and undercut by raging flood waters.

Such rugged pipe deserves your consideration. Its strength is evident, its initial high carrying capacity is permanent, and its useful life is exceptionally long.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

BOLD WATER PLAN GETS OK—Consultants' review has confirmed the feasibility of the Feather River plan. The scheme to store water behind a dam bigger and higher than any in the U.S., then transmit it through an aqueduct nearly the length of the state of California, has been deemed a practical and economic project by the Bechtel Corp. and cooperating consultants (p. 26). Their review indicated desirability of only minor changes in the ambitious scheme and its financing. They agree that the whole thing could be handled by California without help, but they go along with current feeling in the state that federal participation might be warranted, in view of recent flood losses. Financing will work out; an even bigger hitch in the scheme is the question of water rights.

MORE STEEL COMING—A bright patch of sunlight appeared this week through the overcast of materials shortages. Speaking at the National Conference on Public Works, N. P. Hayes, first vice president of the American Institute of Steel Construction, optimistically forecast a 12% rise this year in shipments of fabricated structural steel. And, he spelled out three reasons why contractors may not have as much trouble with the steel shortage this year as they did in 1955 (see page 110).

JUMP IN JANUARY—Super-booming seems to be the best way to describe the pace being set by contractors in signing up new business. Contracts skyrocketed to $608 million this week (page 107), the biggest weekly volume since 1953. With but one more week to go, January awards look like a sure bet to set a new record for the month. The three-weeks total tops $1.2 billion; 19% ahead of last year. All major types of work are running ahead of 1955 except waterworks and private mass housing.

QUICK ROAD ACTION?—In sharp contrast to a year ago, congressmen are apparently betting on quick action on a national highway program—more or less in line with President Eisenhower's original proposals. One of the eight lawmakers who addressed ARBA's Miami Beach session (p. 28) was willing to be quoted that there will be action within two months; others think it will take just a big longer. But all were agreed something will happen soon. Key to their optimism is the belief that some formula will be found to pay for a much expanded construction program without going outside the budget. Certainly, there's no lack of suggestions for paying for the roads—the American Automobile Association (p. 19) came up with one idea this week, the Committee for Economic Development (p. 28) with another.

UNION CARBIDE has long been closely identified with silicones through the work of its Division, Linde Air Products Company. To an important degree, industry has come to "Look to LINDE for Silicones."

Silicones are incredibly versatile man-made chemicals offering startling advantages in more and more products and processes. You may find that their stability under wide temperature change is the quality that interests you. Or it may be their water repellency, their high electrical resistance, or some other special property.

Interesting new developments, as well as the many proven needs, have now led to the formation by Union Carbide of a Silicones Division. With the world's most modern silicones plant almost ready to go on stream at Long Reach, W. Va., this new Division will be responsible for Union Carbide's program for the development, manufacture, and sale of silicone products.

This is more than just a change of name. While addresses and telephone numbers will remain the same, customers will be served by still further expanded sales and technical staffs.

But of prime importance, it means that through the expanded organization and vastly increased output, Union Carbide will provide more silicone products, in a greater variety, to match the needs of the fast-growing number of its silicone users. If you haven't already checked on the potentialities of silicones in your business, you should. Now, more than ever, it will pay you to...

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For example, water repellents based on LINDE C-25 Silicones have already established themselves as the long-lived weather protection for masonry structures. It will pay you to protect the original beauty and quality of your masonry. Just one "invisible raincoat" of water repellent made from UNION CARBIDE C-25 Silicone will give years of trouble-free protection.

WASHINGTON OBSERVER

Eisenhower has a handful of new programs for Congress covering a wide variety of problems that require new construction spending. But for a number of these, the big question still is: Just how much pressure will the Administration put behind the proposals? On some, too, the President provides no details in his messages to Congress (see page 21).

Housing proposals also are still generalized in some cases. For instance, the President proposes a new program to give special mortgage insurance for older people. Presumably, additional incentives are needed.

Liberalization of home improvement loans is another big program still to be revealed. Odds favor approving something like maximums of $3,500 for five years.

Flood damage indemnities and insurance are spelled out in bills introduced by Administration supporters. Federal and state governments would pay a substantial part of premiums charged by private companies.

Aid to depressed areas is being worked out. Ideas include assistance for the construction of needed public works.

Construction grants to medical facilities are in the budget. But the President says his legislation is still to come, detailing just who gets how much of the $40-million appropriation being asked.

•

Water policy is one of the big question marks. The President reports that his Cabinet Committee on Water Resources goes all-out for partnership. But this has more in it than allowing utilities to build the power plants of the big multi-purpose developments. He has already adopted the committee's recommendations, and will back legislation to carry them out.

Congress will be asked to require users of water to pay—and this means those who profit from traffic on waterways that have to be federally-built or maintained; those benefiting from flood-control dams; and industrial or other users of water that's available because of federal programs.

Eisenhower hints at a closer check on water development spending. He stresses the "need for strengthening our procedure for the formulation and review" of proposed projects. The clear implication is that White House Coordinator of Public Works Planning, Gen. John S. Bragdon, will have a much bigger say in developing and screening proposals from the Bureau of Reclamation and the Army Engineers.

•

The Chief Executive will have to take the lead on highway legislation if any substantial new program is to be approved this year.

This week the biggest organization of motorists had its say—the American Automobile Association came out for "pay-as-you-build," and proposed additional taxes on motor fuels and tires, with trucks paying more. AAA asks its 5-million members to turn the heat on their congressmen.

The Committee for Economic Development suggested this week (p. 28) that the $25-billion interstate system be built on a sort of installment plan basis—setting user-tax rates at such a level that over, say, a 20-year period there would be enough revenue collected to pay off the cost.

The Administration will be without Francis V. du Pont who was Eisenhower's main highway salesman before the Congressional committees. He's going back to private life.

•

Sales of home mortgages to the government show a sharp trend. Mortgage bankers and others last year stepped up sales to Fanny Mae from a low of $100,000 in February to a peak of $28 million in December. Lenders are willing to tie up 3% of what they get in Fanny Mae stock—as required by law—in order to get new funds to lend.

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On the State of the Union and Budget Messages . . .

What Action Will Congress Take?

The Administration's position—as spelled out by the President's State of the Union and Budget Messages—is under close scrutiny by Congress. In these messages, Eisenhower recommends:

- Aid for school construction with $1.25 billion of federal funds over a five-year period. Funds to be matched with state money on the basis of need.
- Reconsideration of the multi-billion-dollar interstate highway program offered last year. However, it was not made clear how the program could be supported financially.
- Hydro power development by local groups—both private and public and federal-local partnership for construction of multi-purpose projects. Only on the very large regional projects would the federal government be the sole source of funds.
- Authorization of a two-year public housing program at a rate of 35,000 units a year with some allotment preference given to the aged.
- A program of flood control—bigger than was expected—concentrated principally in the Northeast.

All in all, the Administration's construction spending program adds up to about $5.3 billion. This would make fiscal 1957 the third straight year in which such spending has risen. An estimated $4.9 billion will have been spent by the end of June and $4.7 billion was spent in fiscal 1955.

The Democrats, who control Congress, will pick away around the edges of Eisenhower's varied construction spending plans. But in general—on the really big programs—they can't be against what the President proposes, since the projects are for the kinds of things the Democrats backed during all the years they were in power. Even though they don't really think that "me too" is a good campaign slogan, they see themselves boxed into a position where they have to come up with something that's a bigger and better version of the things the Republicans have adopted.

Actually, the strategy in Congress is to see which party can somehow come up with the credit for voting what will impress the voter most at election time next fall.

Categorically, Congress will be faced with decisions on these programs this year:

Schools

A multi-billion-dollar program of federally-aided school construction has become a real possibility for enactment at this session. Eisenhower last week backed up his State of the Union promise by recommending $1.25 billion of federal matching grants over a five-year span, to build some $2.5 billion of new schools.

His figures are not too far from the $1.6 billion in four years proposed by the Democratic Kelley Bill that the House Education and Labor Committee approved last year. At that time, the Administration wanted federal grants limited to $200 million in three years, to go only to poor school districts that could not obtain construction funds in any other way.

A test of Republican intentions will come during House action on the Kelley Bill. There is no chance of getting another bill through the Education Committee this year. In most respects, except federal construction grants, the Kelley measure corresponds pretty closely with what the Administration proposed last year and again this year.

House Republicans are expected to support the bill if the Democrats give them half-way opportunity to amend it on the floor. The Republicans want some modifications that will bring the measure more in line with the President's recommendations.

- **Segregation or integration**—Biggest hurdle will be an anti-segregation amendment which is almost sure to be offered. If adopted, such an amendment would kill chances for getting the bill through Congress. It will take a lot of Administration pressure to line up enough Republican votes to defeat an anti-segregation rider.

Other Administration proposals are much like last year's, generally similar to the provisions of the Kelley Bill. They call for:

- Federal grants amounting to $1.25 billion to be given out at an annual rate of $500 million on a matching basis with state funds. "Neediest" districts would get this help.
- Loans of $750 million over the five-year period for federal purchase of local school construction bonds when school districts cannot sell them in private markets at a reasonable interest rate.
- Advances to help provide reserves for bonds issued by state school financing agencies that would build schools to be rented (and eventually owned) by local school districts.
- $20 million in matching grants for planning to help states and communities to "overcome obstacles" to their financing of school construction.

Even without federal aid, the states and communities could be expected to build 410,000 new classrooms in the next five years, the Administration says. Federal school construction grants should increase the volume of building to 470,000 classrooms, according to this analysis. That is the five-year goal of the Administration.

The President asks also for two-year extension of aid for school construction in federally affected areas. The present law expires June 30. Federal spending is estimated at $64 million next year in these areas, as compared with $95 million in the current fiscal year ending June 30.

Highways

Congress probably will vote a bigger federal highway program this year, but it is not likely that it will be anything like the ten-year, $25-billion Eisenhower plan of a year ago.

The President's proposal went under largely because of financing—the plan was to create a federal highway bond-issuing authority. This year, in his State of the Union Message, Eisenhower again called on Congress to approve a program for an improved 40,000-mi interstate system. But he offered nothing new in the way of solution to the knotty question of finding the funds for such a program.

Highway oracles in Washington are convinced that without strong White House leadership and pressure to

. . . Plan for roads; partners in power

swing Republicans behind highway spending, the chances for the approval of the long-range bill are quite slim at this time.

Political cross-currents of an election year will largely determine the outcome. The Administration has swung around to acceptance of the Democratic pay-as-you-go principle. And House Democratic leaders are readying long-range legislation that wraps up the interstate program and federal aid for other roads in a single package.

But the big bill will have to buck election-year reluctance of congressmen to vote the tax increases that would be necessary to finance the heavy expenditures.

• **Big bill has a fighting chance**—However, Democratic strategy in the House gives the interstate program at least a fighting chance. Party leaders have discarded the idea of writing two bills—one for the interstate projects and the other for regular, recurrent federal aid. To do that, as Speaker Sam Rayburn put it, would invite defeat for the interstate measure.

Strategy this time aims to correct a major weakness of last year's proposal, which wrote the tax increases into a bill reported by the Public Works Committee. This year, plans call for a new Fallon Bill that will merely authorize the interstate program with the federal aid to go to other roads while the interstate system is being completed. At the same time, the orthodox tax-writing body—the House Ways and Means Committee—will get to work on a separate revenue measure to be added to the Fallon Bill by floor amendment. There are risks in this procedure, but it offers the best chance for the interstate project.

House Republicans still have to be won over to the single-package plan. Rep. Harry McGregor, former chairman of the roads subcommittee, last week put in a bill that would do nothing more than extend regular federal aid for another two years, at $975 million a year instead of the present $875 million.

That kind of bill has strong attraction for many congressmen. They think it would satisfy their constituents this year.

If the interstate program goes down to House defeat for the second time, a two-year extension of regular federal aid at a rate of $1 billion a year or more will likely come out of Congress. In any event, the states are sure of $875 million under existing law for the year starting July 1. A new law must be enacted at this session to enable state legislatures to budget their future highway expenditures when they meet next January.

There is little chance that the House would approve the Senate-passed Gore Bill. Sen. Gore's measure proposes a five-year program involving $12 billion of federal funds, of which $7.5 billion would go to the interstate system. Nothing is said about taxes in the Gore Bill.

Water Power

The Administration will continue to encourage more hydro power developments by local public and private groups. Further, it will renew efforts to establish the concept of federal-local partnerships for construction of multi-purpose projects—except for those big regional ones like the $1.5-billion Upper Colorado project.

In line with this approach to water and power developments, the President requested fast Congressional action on the Upper Colorado project and on the $136-million Frying Pan-Arkansas transmountain diversion system in Colorado.

• **John Day Dam a test case**—By way of implementing the partnership principle, effort will be made to get Congress to convert the already authorized $310-million John Day multi-purpose project on the Columbia River into a joint private utility-Army Engineer venture.

The John Day proposal would vest ownership of all facilities in the federal government. Three Pacific Northwest utility companies would stand the entire $273-million cost of the project's power facilities in return for 50-year contracts for the dam's power output.

Last year Congres voted the Army Engineers $500,000 to plan John Day Dam. If Congress were to vote the Army Engineers initial construction funds, this move would indicate the Democrats' complete rejection of the partnership concept.

Democrats refused to accept the $37.5-million Cougar Dam project as a partnership proposition at the last session. They by-passed the issue in another instance by ordering a two-year study of the partnership proposal in connection with California's proposed $200-million Trinity River development, for which federal construction was authorized. This is the project on which Pacific Gas & Electric Co. wanted a part in building the power facilities. However, in his Budget Message, the President renewed his request that Cougar Dam be made a partnership project. Likewise, he asked that two other projects be handled in this manner. They are the Green Peter-White Bridge Reservoir in Oregon and Bruce's Eddy Reservoir in Idaho.

Although the Administration hasn't succeeded in implanting the partnership principle as a means of expediting construction of multi-purpose projects, the last session of Congress voted to withdraw authorization for federal development of two projects so that they could be built entirely by local interests. In one case, it cleared the way for Alabama Power Co.'s five-dam, 375,000-kw development on the Coosa River, on which work has begun. In the other instance, the Grant County (Wash.) Public Utility District was enabled to get an FPC license for a $341-million development on the Priest Rapids site on the Columbia River.

Partnership development of multi-purpose projects hits a snag on the Democratic side because of the party's long-standing position of championing the interests of customers entitled to preference in the marketing of power from federal dams. The Democrats are on record as being distrustful of exclusive federal power contracts for private utilities.

• **TVA fight looms**—Eisenhower asks for new legislation to give TVA authority to issue its own revenue bonds, which would finance three new steam-electric units in two existing TVA power plants. These, the President says, will meet TVA's power needs "through calendar 1958."

The TVA revenue bond plan will touch off a hot debate on the Administration's intentions toward TVA—but in the end the revenue-bond authority stands a good chance of passage.

The Democratic-Republican split will be felt, too, in debate on Niagara power legislation. Last year, Democrats left hanging a bill to authorize the New York State Power Authority to construct the $400-million development and Republicans pushed legislation that would have permitted private construction.

Although it's expected to fail, there will be some fireworks at least for election effects over Sen. Wayne Morse's attempt to induce Congress to nullify the FPC's license to Idaho Power Co. for development of the Hells Canyon site on the Snake River in Oregon.

Congress can be expected to provide more money for 11 river-use projects for which it appropriated initial construction funds last year. Included

are such projects as Yellowtail Dam in Montana and Hartwell Dam on the Georgia-South Carolina line, each of which will cost $95 million to complete.

Housing

Repeating his request of a year ago, Eisenhower again urges Congress to authorize a two-year program of public housing at a rate of 35,000 units a year. After a similar request last year, Congress ended a House-Senate fight by compromising on 45,000 units for one year.

The result this time may be much the same. Last year, the Senate majority in favor of public housing practically restored the original 1949 program by voting 135,000 units a year for four years and, in addition, tacked on 10,000 units a year for old people. But the House, which traditionally opposes public housing, overrode the recommendations of its own Banking Committee by killing the authorization completely. Conferees finally worked out a compromise that both houses would accept.

Senate Democrats will try again for a big public housing program this year, with a special allotment for older people. The House can be expected to vote against public housing on the first round and, in the end, give reluctant consent to a trimmed-down program.

Eisenhower this time takes on some of the Democratic ideas for housing the aged. He would give a limited preference to elderly people in public housing, and would amend FHA mortgage insurance legislation to encourage private construction of dwellings for sale or rent to older persons.

Under existing authorizations, the Administration foresees no great rise in public housing construction. It expects 25,000 units to be started in the year ending June 30, followed by about 35,000 during the following twelve months. Loans to local housing authorities to get construction started are expected to go up from $414 million in the current year to $473 million in the next.

Regular government programs for insurance and guarantee of housing mortgages will continue at the present level, the Administration estimates. That would call for government backing of mortgages on nearly a million dwelling units this year and again next year—with a mortgage volume of more than $11 billion in each twelve months. If the loan patterns of the Veterans Administration and Federal Housing Administration continue, some 60% of the mortgages will be for new housing. Between them, the two agencies in the last year have been guaranteeing and insuring mortgage loans for more than half of the new private dwelling units started.

In addition to this business, the Administration looks for an upsurge in FHA insurance of mortgages for special types of privately financed urban renewal housing, authorized in 1954. Eisenhower says applications for this new FHA insurance are expected to rise to 75,000 units in fiscal 1957.

College housing loans are going like a house afire. Applications have been pouring in since Congress liberalized the program and put a ceiling of 2¾% on the interest rate last year.

The Administration expects the $500-million authorization to be used up in about a year. Eisenhower is asking an additional $100 million, but at a higher interest rate that will permit private investors to buy college housing obligations. He wants private capital to help in financing the $2 billion to $4 billion of dormitories that he says will be needed in the next ten years.

The President also asks Congress to extend the new FHA military housing program beyond Sept. 30, 1956. He reports that the Defense Department expects to arrange the financing and construction of 100,000 units—about $1.35 billion of new housing—this year and next under the insurance authority voted at the last session.

Flood Control

Hurricane-induced rainstorms of last August have converted the Administration to all-out support of Northeast flood control. The new program of dams and local protection works is even bigger than predicted (ENR Dec. 8, 1955, p. 22).

As a first, fast move to get the program rolling, President Eisenhower this week asked Congress to vote starting funds that can be used at once—in the current fiscal year ending June 30—to begin work on five new dams in New England and Pennsylvania. These projects are the $17.9-million Bear Creek Reservoir in Pennsylvania, the $16.6-million Ball Mountain job in Vermont, the $4.8-million Otter Brook project in New Hampshire, and two reservoirs in Massachusetts—Buffumville costing $2.8 million and Barre Falls, $2.7 million. They add up to nearly $45 million for five dams that the Corps of Engineers could quickly get under contract.

Supplementing these initial projects, the President urged Congress to appropriate funds for a much bigger list in the fiscal year beginning July 1. For that twelve-month period, Eisenhower asks money to start 11 new dams costing $77 million and three local protection projects costing $14 million.

These Northeastern projects—19 in all, with a total estimated cost of $135 million—make up the bulk of the Administration's new flood-control starts. For the rest of the country, the President wants money to start 15 local protection projects costing $38 million, but his Budget Message makes no request for new flood-control dams outside the Northeast. Some additional new flood-control projects may be recommended later when surveys are completed of the West Coast area damaged by December floods.

Rivers and Harbors

Eisenhower hasn't given up the idea that beneficiaries of navigation improvements should pay part of the cost. A year ago, he attached a cost-sharing proviso to his budget recommendation for starting the $95-million, 40-ft channel project in the Delaware River between Philadelphia and Trenton.

Six months later he conceded that a lot of time would be needed to work out a consistent overall policy for sharing the cost of waterway projects. So he told Congress to go ahead and vote starting funds for the important Delaware channel without any cost-sharing provisions. But Congress failed to include the project in the big public works appropriations bill that it passed.

This week the President again asked for starting money, but he trimmed the Delaware River project to a 35-ft channel depth that would cost the federal government only $61-million.

It was the additional five feet of depth that caused the cost-sharing fight. U. S. Steel and other local beneficiaries were asked to pay about half the $36-million cost for removing the final five feet of river bottom.

One other big new navigation project is requested by the President—the $110-million job of deepening the Great Lakes connecting channels to accommodate vessels that will use the 27-ft St. Lawrence Seaway. He wants Congress both to authorize the project and to vote funds for starting it.

Elsewhere around the country, Eisenhower asks for construction money to start 40 navigation projects varying from a few thousand dollars to more than $6 million in size. Adding up all 42 navigation starts he recommends, the total estimated cost comes to $200 million.

(*Continued on page 24*)

. . . Military construction—a big part

But, in a contrary recommendation, the President clamped down on two of the biggest projects in the hundred-or-so new starts that Congress tacked on to the Administration-approved list last year. Eisenhower isn't trying to hold up other projects but he says now he wants no construction done on two big jobs in the Arkansas River system—the $153-million Eufaula Dam and the $95-million Dardenelle lock and dam. His reason: It would cost $1 billion in all to make the Arkansas fully useful for navigation, and he thinks this big a commitment cannot be justified at this time.

Military

Military and defense construction is almost 40% of the government's total of $5-billion expenditures scheduled for the year beginning next July 1. But for obvious reasons of national security, the government puts out in its otherwise-detailed budget only the big round figures on military projects, with virtually no breakdowns available.

However, as the year goes along, more information on military construction becomes available from a variety of sources. Appropriations hearings, hearings of the Armed Services Committees on projects authorizations, investigations of one kind or another—all these tend to produce information on the military's programs.

Construction expenditures for military public works will continue at a level of about $1.9 billion per year, the President indicates in his Budget Message.

Spending this year is estimated at $1.92 billion, an increase of $310 million above fiscal 1955. For next year, the figure is expected to decline slightly to $1.87 billion.

Because of the reduction of carry-over funds the Defense Department will have to ask Congress for new cash totaling about $1.7-billion for fiscal 1957.

Actually, defense officials say much of their construction will continue to be completing projects already begun, and expanding facilities at existing bases, rather than beginning entirely new installations.

Among the new programs, however, are relatively small appropriations—some $57-million—to get underway a construction program for reserve component facilities for the Army and Navy.

Navy says it will emphasize airfields for training and operation of jet planes, and facilities for berthing and dry-docking its growing fleet of supercarriers. One key Air Force program is the buildup of the radar warning networks. Army will keep on its building of Nike anti-aircraft missile firing stations.

The total spending on construction by service runs like this for fiscal 1957:

Air Force will spend $1.0-billion, down a bit from this year's estimated $1.24-billion. The Army expects to spend $416-million on construction, up somewhat from this year's estimated $406-million. Navy plans to spend $355-million next year, a big rise from this year's $225-million.

Atomic Energy Commission expects to spend $301-million in 1957—about the same as this year, but 'way below last year's $787-million.

Reclamation

Future of the Bureau of Reclamation as a big engineering organization depends largely on what Congress does about the Upper Colorado and Frying Pan-Arkansas projects. The Administration backs both projects as strongly as it did last year and the year before.

In addition, though, Eisenhower asks Congress to get construction started by approving money this year for four other projects already authorized and three that require authorization. Total cost of these proposed projects—for construction—is about $105 million.

Overall, the new starts requested this year for the Reclamation Bureau would generate more than $1 billion of construction. But, if Congress limits its starting money to projects already authorized, the total addition to Reclamation's forward log will be less than $100 million. The four authorized projects that Eisenhower wants to start add up to only $35 million, but that total will go up shortly when Congress completes its authorization of the $28-million Ventura irrigation project in California.

Other Programs

• **Aid to airports**—Eisenhower's budget shows the sizeable increase in airport grants that Congress forced through last year. All told some 420 airports are to have some work done during the year beginning next summer; total expenditures under the program rise from this year's $24.2-million to $50-million. Total construction called for is double this, of course; the federal grants have to be matched dollar-for-dollar. The increased spending is part of a new four-year program enacted last year that calls for $63.5 million in federal aid each year.

• **Construction statistics and information**—The Administration is asking for money for a number of important programs to fill in gaps in construction statistics.

Commerce would get $800,000 to improve its series on private non-residential construction and non-federal public works, and to initiate figures on dollars spent and materials used in alteration and repair of buildings.

Bureau of Labor Statistics would get funds to survey labor requirements for construction.

Housing and Home Finance Agency is in for $175,000 to find out the factors that influence demand for housing.

Bureau of Census is requesting $1.8-million for its first national housing inventory since 1950; this will show breakdowns on quantity and quality of housing available for the nation, the states, and 35 metropolitan areas.

• **Hospitals and medical facilities**—Grants to non-public hospital construction during fiscal 1957 are expected to hit $45-million, $10-million more than for this year.

Veterans hospitals will get $55-million for construction next year; up from this year's estimated $36.3-million. Grants to public hospitals will be $36.8-million, up from this year's $28.7-million.

In addition, the President is proposing a new program of grants for the building of medical and dental research and teaching facilities. Congress is being asked to appropriate $40-million; expenditures the first year are estimated at $5-million. The President will propose another new program to provide federal mortgage guarantees for constructing medical buildings.

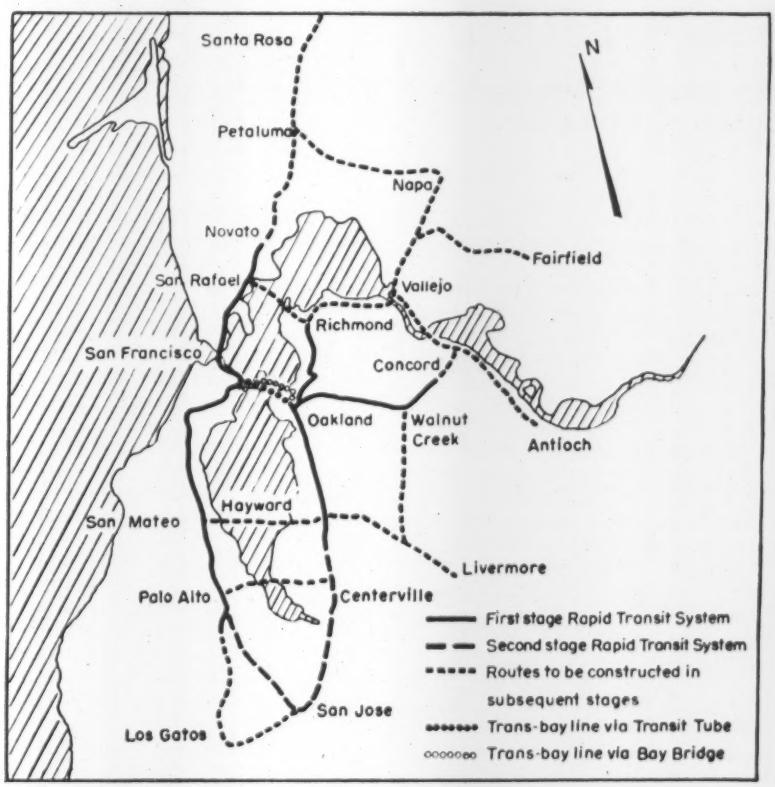
Money for Statistics

To improve the fund of construction statistics, the Budget Message made these specific allocations:

• There's money for a brand-new national housing inventory—the first in five years. This will show what's actually been built since 1950, give builders a better idea where to go from here.

• Another census of local governments—the first since 1942—is proposed to bring in information on such things as their ability to float bonds for various public works, and the like.

• This year, the President is asking for $1.3-million to improve the quantity and quality of current statistics on volume of construction—the figures now being published, it's generally agreed, are not very good.



$1.5-Billion Transit Change

The San Francisco Bay Area Rapid Transit Commission has taken the wraps off a $1.5-billion plan to revamp its transportation system in nine counties.

The plan is based on a two-year engineering study by the New York City firm of Parsons, Brinckerhoff, Hall & Macdonald. Its goal is to cure transportation and traffic ills in the 7,452-sq-mi area formed by the counties of San Francisco, Alameda, San Mateo, Santa Clara, Contra Costa, Marin, Napa, Sonoma and Solano.

The new rapid transit system—a 35-year project—would combine subway, elevated and surface operations and require construction of 390 mi of double track facilities. Trunk of the system would be an underwater tube running from San Francisco to Oakland.

Electrically-operated, lightweight trains would be controlled by an automatic electronic dispatching system. They would attain top speeds of 70 mph and average 45 mph.

The supported system of electrically-powered trains was recommended in preference to monorail by the engineers, after several types of transit facilities were evaluated. Gibbs & Hill, employed by the Parsons firm to make a special study of monorail, reported that the suspended train system is feasible from an engineering standpoint. However, they suggested that a test monorail section be built and operated before a complete installation is approved.

The present bay-area population of 3,000,000 is expected to approach 4,500,000 by 1970—and more than double by 1990. In order to develop facilities to match transportation requirements, a three-stage construction program is proposed.

• **First phase**—The first stage of construction contains an optimum and a minimum plan. While these plans are generally the same, they differ in proposals for the trans-bay link and for downtown San Francisco and Oakland lines. Capital cost of the first phase under the minimum plan is estimated at $586 million. Cost of the optimum plan is set at $716.5 million.

Here is the proposed first phase of the program:

• San Francisco and Oakland would be linked by fast train service operating either through a new trans-bay tube (optimum plan) or on existing Key System rails on the Bay Bridge (minimum plan). Under the optimum plan, motor vehicle capacity of the lower deck of the Bay Bridge would be increased by replacing Key System tracks with a paved roadway. The need for a second Bay highway bridge (ENR Dec. 22, 1955, p. 19) would be deferred to a later date.

• Two main lines would be built from San Francisco. One would end at South Palo Alto, the other would head north across Golden Gate Bridge to a terminal north of San Rafael. Reports find it feasible to construct tracks on Golden Gate Bridge below the motor vehicle deck.

• From Oakland, routes would run north and south along the eastern bay shore with terminals at Richmond and Decoto, and northeast with a terminal at Concord.

• Parking lots with easy access would be built next to all suburban terminals.

• All lines would be grade separated or on protected private rights-of-way. Elevated or subway structures provide for grade separation where routes are in densely populated areas. (The optimum plan provides for a subway under Market St. in San Francisco and some underground lines in Oakland. Under the minimum plan, elevated lines would serve instead of subways.)

• **Final stages**—The second stage of construction, which would cost an additional $112.5 million, calls for extending the San Francisco peninsula line from South Palo Alto to San Jose, and up the East Bay to a connection with the East Bay line at Decoto. The Marin County line would be extended to a terminal at Novato.

Ultimate extensions to Sonoma, Solano and Napa Counties—plus more facilities in Contra Costa, Alameda and Santa Clara Counties—would add about $700 million to the cost and complete the program.

The engineers estimate that legislation, design and construction for the basic integrated system will take six years. They said either plan—optimum or minimum—will require a public commitment of $30-$35 million annually for 30 years for interest and amortization of funds that must be borrowed for capital costs of the first stage. Basic forecast for the first-stage optimum plan is that income would cover operating expenses, interest and amortization of the rolling stock. The minimum plan would produce enough income to take care of operating expenses but not quite enough for full debt service on equipment.

A study of financial and organizational aspects of the program is now being completed by Stanford Research Institute. The report—expected to be released about March 1—will cover methods of financing and the type and scope of administrative authority.

Engineers Okay Feather River

Bechtel Corp. report terms hydro-irrigation plan feasible, but suggests postponing construction of Oroville Dam

California's proposed $1.6-billion Feather River Project is called feasible on both engineering and financial aspects in a report prepared by the Bechtel Corp.

An intensive 4½-month study by Bechtel and a platoon of consultants was made as a check on the findings of now retired State Engineer S. D. Edmonston who recommended immediate action on the project early last year (ENR March 10, 1955 p. 21). The Bechtel report to a joint legislative committee on water problems puts the future of the vast water supply project squarely up to the legislature.

The 1956 session of the legislature is strictly a money session. It could vote funds for start of detail designs and right-of-way acquisition. But unless the governor calls a special session, it cannot take the several other actions that seem necessary in order to get the project started:

- A clarification of the "counties of origin" water rights law so legal ownership of project water will be assured.
- Establishment of a separate and unified State Water Department—a department believed needed by most observers.
- An act that would put a $1.5-billion general obligation bond issue up to a vote for approval by the people of the state.

It now appears almost certain that a separate water-problems call of the legislature will be made by the governor.

From an engineering and construction standpoint there are only two important differences between the program previously recommended by the state engineer and that suggested by Bechtel:

State—Carry water all the way to San Diego County only a few miles from the Mexican border.

Bechtel—Terminate in the San Fernando Valley north of Los Angeles, at a saving of $150 million in cost.

State—Start construction now including the Feather River aqueduct and Oroville Dam.

Bechtel—Start Feather River aqueduct now but delay Oroville Dam until project water demands reach 2,500,000 acre-ft.

From the financial standpoint, differences are minor. Bechtel's cost estimates are only 3% to 9% higher than the state's—well within preliminary estimate limitations. And Bechtel agrees on feasibility of financing the works through general obligation bonds.

Financial consultants worked out a financing scheme that is slightly more favorable than the state plans. Term bonds would be used with fixed maturity dates up to 50 years, whereas the state plan called for 40-year bonds. A second financial advantage is in proposed deferment of the huge $400-million investment in Oroville Dam for more than 10 years. This results in annual costs more nearly equal to expected revenue, with smaller contributions required from the state's general fund.

Delay of the start of Oroville Dam is possible, according to Bechtel, because there is enough water flowing into the Sacramento-San Joaquin River delta region to fulfill initial water demands of the project. And power demands of the aqueduct pumping plants do not make the 440,000-kw power plant at the dam necessary at the start.

It is probable that the recommendation on delaying construction of Oroville Dam was written before the late December California floods. California sentiment now is for immediate construction of the huge dam (bigger than Grand Coulee and higher than Hoover) to take advantage of the flood-control potential at the earliest possible date. That introduces the possibility of federal financial aid, not considered in either the state or Bechtel report. Neither Bechtel nor the state considered possible federal participation in analyzing the economic feasibility of the project. They both believe that the plan can be built entirely through state financing. However, the Bechtel report does urge the state to seek federal participation. Such help from the federal government would make the entire scheme even more attractive financially. And it would justify construction of Oroville Dam earlier than recommended in the Bechtel report.

Very Little Change For Feather River Project

In essence, the Bechtel report makes no significant changes in the concept of the project. It would still include Oroville Dam, a 730-ft high, 14,000,000 cu yd concrete gravity structure on the Feather River in northern California. And it would include the Feather River aqueduct that would pick up water from the Sacramento-San Joaquin River delta region for shipment south. It would include San Luis Dam, a big earthfill partly down the San Joaquin Valley. The project would still serve these major areas—west side of San Joaquin Valley, Alameda and Santa Clara Counties at the south end of San Francisco Bay, and the entire southern California coastal area.

On the Right Track

New York to use old rail routes for new highways

The New York State Department of Public Works has proposed construction of two arterial highways along historic rail routes in Mt. Vernon and vicinity.

The 6.1 mi of new divided highways would cost $22.5 million—a record for any of the urban highway modernization plans in that part of the state. But they are expected to help solve the traffic problem on the congested northern rim of New York City.

The east-west route—to be called the Cross Westchester Arterial—would link the New York Thruway at Yonkers and the New England Thruway at New Rochelle. Part of the route now carries mainline tracks of the New York, New Haven and Hartford Railroad, and the state would deck 15 blocks of the cut for the road. One mile of construction would be required in Pelham and New Rochelle, another mile in Yonkers.

The north-south arterial—to be known as Route 125—would utilize the old right-of-way of the New York, Westchester and Boston Railway, which became defunct in 1938. This road would run north from the Bronx boundary to Mt. Vernon, swing into a new route to join the Cross Westchester Arterial, then head north again.

Ultimately, the Cross Westchester Arterial would be extended beyond the New York Thruway in Yonkers to connect with the projected Park Hill Arterial. Route 125 would be extended ½ mi south in the Bronx to connect with the Boston Post Road. On the north it would be extended ½ mi to join New Rochelle's Webster Ave. and projected Memorial Highway.

Mt. Vernon is the 53rd city to receive an arterial plan since New York State began to program ten years ago in 1946.

So far, 45 cities have approved plans and 50% of them have already started construction.

The "bob-tail" wont be the end as . . .

Florida Plans Northern 'Pike

The Florida Turnpike Authority has approved the building of a 270-mi toll turnpike at an estimated cost of $185 million to connect with the 110-mi "bob-tail" turnpike now being built from Miami to Fort Pierce. The new road will have its northern terminus at Tisonia, 15 mi north of Jacksonville on U.S. 17.

Bond validation proceedings will be started immediately. Chairman Thomas B. Manuel of the State Turnpike Authority says the bonds probably will be sold in late spring or early summer and that construction work will be begun soon afterward, with completion of the turnpike possible by 1958. The target date for opening of the Miami-Fort Pierce turnpike is January 1, 1957.

The turnpike route selected by the engineers, Howard, Needles, Tammen & Bergendoff, runs due north from Fort Pierce to a point west of Vero Beach, then westward and northerly to Kennansville; then east of Kissimmee; northward to a point 8 mi southwest of Orlando; then 3 mi east of Ocala, 3 mi east of Starke and 6½ mi west of Jacksonville.

The authority also aproved construction of an 80-mi spur from a point near Leesburg to the Tampa Bay area, but under the terms of the turnpike bond issues no dirt can be turned on this project until the northern link of the turnpike has been in operation two years. Moreover, the authority was advised by its traffic engineers, Coverdale & Colpitts, that present traffic does not warrant construction of this Tampa spur right now.

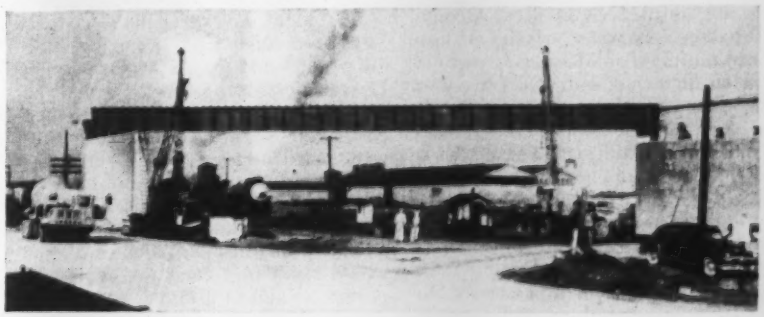
Sam Brown of Coverdale & Colpitts estimated that tolls from the state-long turnpike would average $21,159,000 a year for the first five years and that income from concessions would be $2,145,000 a year.

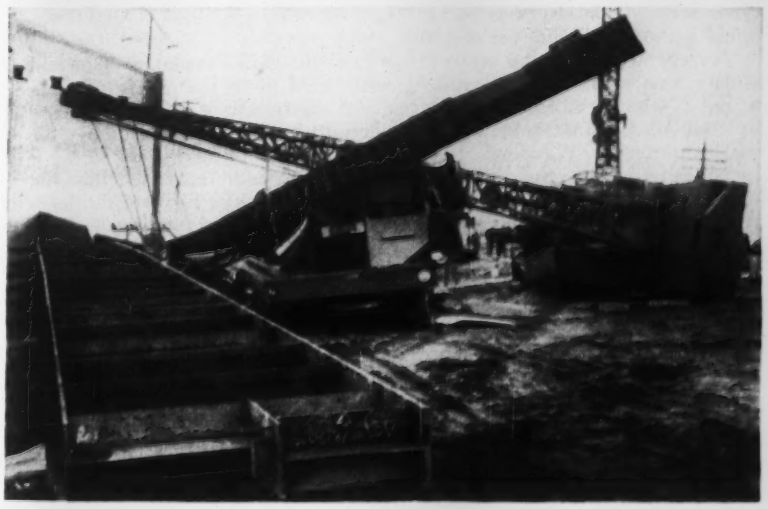
"We're going to complete this turnpike in 1958," said turnpike chairman Manuel. "It doesn't take any longer to build a full-length turnpike than it does a bob-tail."

Originally the northern section of the turnpike was estimated to cost $207 million, but in the light of the experience on the Miami-Fort Pierce portion this figure has been revised to $185 million. The bob-tail section was scheduled to cost $74 million, and bonds were issued on that basis, but contractors' bids were so far below estimates that the total saving on that section will be about $12 million.

On the northern section, which will criss-cross many of the main arterial highways, there will be 13 interchanges, eight light service areas and eight maintenance areas. By going down through the center of the state, the turnpike will add more than 30 mi to the distance from Tisonia to Miami as compared with U.S. 1, but it will cut off at least two hours of driving time.

Final selection of the route is the culmination of a long period of controversy. The original route discussed was down the East Coast paralleling U.S. 1, but this brought violent opposition from East Coast cities, which feared a loss of business to South Florida. Because of this opposition the 1953 legislature authorized only the 110-mi route from Fort Pierce to Miami. By 1955, sentiment had crystallized in favor of an inland route, and the State Turnpike Authority was instructed to proceed along that line. Jacksonville created a fuss at the thought of being by-passed about 16 mi to the west. That was changed by the State Turnpike Authority to 6½ mi west of the city, but still some Jacksonville interests were not happy and created a big stir in favor of merging the turnpike at its northern end into U.S. 1 near Bavard. But the Turnpike Authority, with the backing of the engineers, did not favor funneling turnpike traffic through the city and said so. That apparently ended the controversy.





One Up, Then Two Down

A 60 to 90-day delay in the construction of an overpass on California's $8-million Fresno Freeway has resulted from dropping two girders as they were being fitted onto the abutments by the fabricators, the San Jose Steel Co. One of the beams was already in place (top picture) when the accident occurred. A crane capsized as the second was being lifted and the girder in the air struck the one in place. Both crashed to the Southern Pacific tracks 23½ ft below. The capsized crane fell on its side, a second was smashed by the falling girder and both girders were bent. Damage to the girders is estimated at $16,000, and both will be tested to determine if they are structurally safe for use on the project.

ARBA Previews U.S. Road Legislation

J. R. Owen
Associate Editor

There was only one subject for most of the delegates at Miami Beach last week—and that was the resumption, full blast, of the nation's "great debate" on an overall, federally-sparked program for rehabilitation of the nation's highway system.

How to get such a program under way, and how to pay for it, were the key subjects, as not less than eight members of Congress and industry leaders addressed sessions of the 54th annual convention of the American Road Builders Association.

Of the several bills introduced during 1955, only two had a degree of recognition; a ten-year construction program, introduced by Rep. George H. Fallon, chairman of the House Subcommittee on Roads, struck a snag on financing; a so-called five-year plan passed the Senate but met defeat in the House.

But Fallon told ENGINEERING NEWS-RECORD that an "entirely new approach" to the legislative program has encountered no opposition and he believes that it will pass during this session.

The new plan—an amendment to the 1955 bill—lengthens the term of program activity from 10 years to 12. It would authorize expenditure of $10 billion in federal aid funds for primary, secondary and urban road construction, and $24 billion in federal aid for completion of the interstate system. Other features: a 90% federal, 10% state contribution for the interstate system, a 50-50 fund-matching plan for the intrastate (primary, secondary and urban) system and a longer period of execution.

Fallon told ENR he is not including a method of financing in the new bill, leaving means of acquisition of $12.5 billion new money up to the Ways and Means Committee. He does, however, favor a pay-as-you-go plan with taxes levied against users.

• **Compromise program?**—Sen. Dennis Chaves, chairman of the Senate Committee on Public Works, told ARBA members it was his opinion that a bill would be passed in this session that would combine the provisions of the five- and the twelve-year plans. This view was shared by most of the other legislators present, with Ohio's Rep. J. Harry McGregor going one step farther: He believes that the highway bill will be passed by Congress in the early stages of the session, and challenged manufacturers and contractors to meet increased construction volume without jeopardizing other segments of the national economy.

McGregor said that with allocation of proceeds from a 2-cent fuel tax to road construction exclusively, no additional taxes would be required.

• **Trucker's view**—John V. Lawrence, managing director of the American Trucking Association, in presenting the truckers' stand on the highway program, claimed that his industry had been wrongly accused of opposition to the roads program. What the truckmen oppose, he said, "is punitive financing"—not the construction program itself.

The ATA representative said that his industry would back this plan:

A straight tax per gallon of fuel. With passenger cars averaging 16.5 mi per gal and trucks averaging 3.5, Lawrence said the trucks would be paying five times as much of the road cost as car users. He said that if tires were taxed at a rate of 5 cents per lb, five auto tires would bring $5.50 in taxes per year. One truck tire however would provide a revenue of $5.50, and with 18 tires per truck unit, this would result in a truck tax of $99.00 per set, or almost 20 times that of the passenger car. This type of tax levy, he said, was equitable.

• **Enough skill available?**—Concern was voiced as to the ability of engineers, contractors and material suppliers to fulfill their parts in the big building program.

It was generally conceded that the two main obstacles now are shortages of engineering talent and a critical supply of steel. (Cement, which a year ago was the number one barrier to the highway program, has been relegated to second position.)

A large portion of the time spent in sessions was given to ways of getting around these problems. Chairman Harold L. Plummer, of the Wisconsin State Highway Commission, presented what he called "irrefutable evidence" that without an increase in the existing pool of engineers, output could be doubled.

Wisconsin's department, with its staff of 400 engineers, planned, designed and supervised construction of $42.5 million worth of highways in 1954. In 1955, the same 400 handled $73 million worth and in 1956 they will handle $100 million worth.

It was accomplished, said Plummer through reorganization of the department to relieve engineers of all non-engineering work, the increase of the non-engineering staff, adoption of photogrammetric surveying, machine lettering and standardization of design in plans and specifications.

• **Materials not a problem?**—A consensus of materials suppliers at the four-day session indicated they are not worried about their ability to fill the demands of a much expanded highway building program.

The suppliers were certain that if highway planners work closely with them on careful programming, production facilities can be geared to produce needed materials to meet schedules, without putting an overstrain on the plants.

"Pay-as-you-go" on the Installment Plan

Any increase in the present volume of federal highway grants should be confined exclusively to the 40,000-mile Interstate System—but federal highway user taxes need not be set high enough to finance a "pay as you build" highway program.

These apparently paradoxical conclusions were the key points in a report made public last week by a subcommittee of the Committee for Economic Development of New York City.

Timed to precede the beginning of a new Congressional session the report includes these major recommendations:

• Highway-user charges, in the form of gasoline and lubricant taxes, are the most practical sources of revenue for highway improvements. Both the federal and local governments should rely mainly on such taxes.

• Receipts from such levies should not be diverted to non-highway uses.

• Federal user tax rates should not be set at a high enough level to pay for highways as they are built, but rather at such a level as to balance with construction costs over a reasonable period of say 20 years. In the meantime deficits in highway financing, if any, should be paid out of general government revenues.

• Tolls are deemed appropriate to finance certain sections of the highway system where construction costs and benefits to users are exceptionally high. The federal ban on aid to toll-financed highways should be restudied with the idea of permitting federal aid to toll roads.

Contract Coming Up

Bid call set for section of San Francisco freeway

Bids are expected to be called in mid-January on the $2.6-million southern leg of San Francisco's Embarcadero Freeway.

Construction of the 1.2-mi section is scheduled to get under way by April. By that time, the state will be ready to advertise bids for the $5.6-million main section of the freeway.

The project is designed to end traffic congestion along the waterfront. It will connect with the Bayshore Freeway system to the south, as well as with the San Francisco-Oakland Bay Bridge.

The new freeway will be a double-deck concrete structure for one-way traffic on each level. The segment constructed under the first contract will handle three lanes of traffic in either direction and will link the freeway to a multi-level traffic separation structure. This separator is now being built by MacDonald, Young & Nelson, Inc., and Morrison-Knudsen Co., San Francisco, under a $5.2 million contract.

The second contract will cover extension of the freeway past the Ferry Building to Broadway, which is a main thoroughfare for cars bound for the Golden Gate Bridge and north bay counties. Each level of this section will provide for four-lane traffic.

Up until a few weeks ago a controversy threatened to delay construction of the freeway. State highway engineers planned the project to run in a straight line in front of the city's historic Ferry Building. But the State Park Commission and various citizen's groups wanted it to swing away from the building and back again to provide space for a state park. This month, however, the city's Board of Supervisors voted to approve the straight-line route.

Bituminous Concrete Hq

The National Bituminous Concrete Association, Inc., will open a national headquarters office next month, according to Sheldon G. Hayes, Detroit, Mich., NBCA president. The office will be located at 1145 19th St., N. W., Washington, D. C.

Coincident with opening its new office, the association has appointed H. Keith Griffith executive director. A former Commissioner of Highways for West Virginia, Griffith is well known in the highway field. He served a term as vice president of the Southeastern Association of State Highway Officials, and was on the West Virginia Turnpike Commission.

Jet Airports—The Price Is High

Build jet planes to fit existing airports—the other way is too expensive.

This is the general consensus of the more than 200 plane makers, airport managers, pilots and government officials who attended a meeting sponsored by the Civil Aeronautics Administration in Washington last week.

The view was underscored by the Airport Operators Council—composed of operators of 40 of the largest civil airports in the country—which reported that a modern heavy-duty runway, built to handle jets, with its associated utilities, taxiways, etc. costs up to $1 million per thousand feet to build. So that a new setup to handle jets could go as high as $7 to $8 million per runway. And if existing runways can't carry the load it could mean real money would be needed to usher in the commercial jet age.

Here are some of the construction problems that will have to be met:

- Runways won't necessarily have to be made longer, but something will have to be done to handle the weight of the new jet transports which may run to 300,000 lb—as much as twice the weight of piston-engine planes using the airports today. Taxi strips may have to be reinforced; they're usually not as heavily built as runways. Runways may have to be beefed up at each end to withstand the impact of planes touching down, and to take the heavier weight when the jets are stopped or moving slowly. On the other hand, representatives of plane manufacturers say they are working on tandem-wheel arrangements that will help spread the plane's weight, and thus reduce the need for added strength in runways and the like.
- Concrete "hot spots" will have to be built on runways now constructed of asphalt. These would be placed at the end of the runway where a jet is given full power at the moment of beginning take-off. The high temperatures produced during the moments before the plane begins to move are too much for asphalt to take without deteriorating. But once a jet starts down the runway, its exhaust heat is dissipated so rapidly that the runway surface is not affected. In taxiing to the runway, the jet motors don't produce enough heat to do any harm.

Airlines in the U. S. have announced hopes and intentions of inaugurating jet flights by 1958, and it was estimated at the meeting that by 1960 or 1965, jet service will include some 100 to 150 cities.

Designers Are Named for Minnesota-Wisconsin Bridge

Contracts were signed this week for design of a new $12-million bridge between Duluth, Minn. and Superior, Wis. Construction of the 8,500-ft bridge will take three years and is not expected to start until 1957.

The contract, provides for payment of $691,000 to Howard Needles, Tammen & Bergendoff, consulting engineers, Kansas City, Mo. Federal funds will cover $414,600, with Wisconsin and Minnesota sharing the remainder.

Two bridges now span St. Louis Bay between Duluth and Superior, but both must open to allow ships to pass, halting auto traffic. To eliminate this traffic problem, the new bridge will be a fixed span with sufficient clearance (100 ft) to permit ships to pass under it. It will be toll-free, with a 30-ft roadway and 3-ft sidewalks on each side.

The contract places a 90-day limit on the preliminary engineering report and a ten-month limit on the final design to follow.

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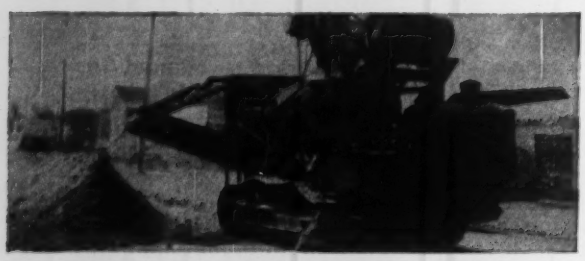
PRODUCTION UP 30%—FUEL COSTS CUT 30%

Arizona Sand & Rock Company replaced a 4-cycle Diesel with a 2-cycle GM Detroit Diesel on this pug mill. Despite clouds of dust, maintenance costs dropped 25%—and production control is better with fast-acting, 2-cycle Detroit Diesel power.

KEEP 600,000-YARD CONTRACT GOING

Marsolino Construction Co. relies on GM Detroit Diesel-powered Ingersoll-Rand Gyro-Flow compressors to keep this 600,000-yard contract moving. They report the Detroit Diesels "start easily—are dependable and economical."



CUTS FUEL COSTS 40%—UPS PRODUCTION 25%

When Miami's R. E. Vaughan, Inc. switched from a 4-cycle Diesel to a 2-cycle GM Detroit Diesel on this ditcher, production jumped 25%—fuel costs dropped 40%. They report the Detroit Diesel delivers more power at less cost, too.

TRAVELS 35 M.P.H. ON THE HIGHWAY

Speed like this *between* jobs means more time on the job for this GM Detroit Diesel-powered Warco grader operated by Michigan's Henry Schmid Sons. Company's Detroit Diesel-powered dragline has worked over 17,000 hours on $100 for repairs.

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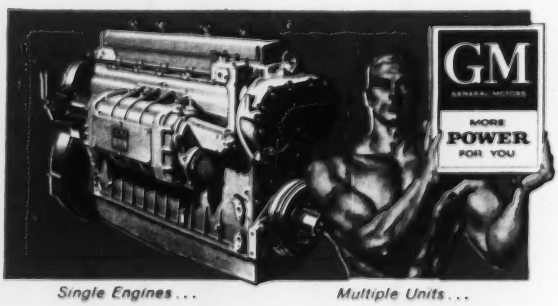
DETROIT DIESEL

Engine Division of General Motors, Detroit 28, Michigan



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Multiple Units . . . *Up to 893 H.P.*

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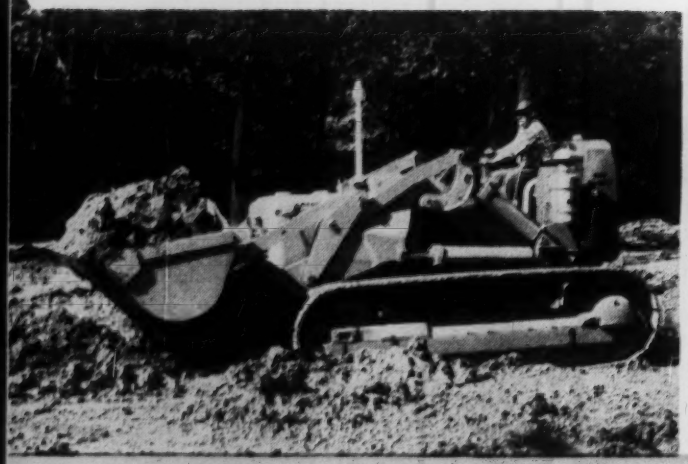
DETROIT DIESEL POWER

NO REPAIRS IN 10,000 HOURS

In 1951, Minnesota's Phelps-Drake Construction Company bought a GM Detroit Diesel-powered Lima Paymaster. And in 1953, they bought a second Paymaster plus a Wellpoint pump—both GM Detroit Diesel-powered. At last report none of the engines had any repairs, were still going strong after more than 10,000 hours. Phelps-Drake also reports production is high—fuel cost low—with Detroit Diesel power.

BUILDER OF DIESEL ENGINES

Hydra Expansion



40° tip back at ground level to hold load.

High lift, with over 11½ ft. of dumping height.

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Here's the new boss of all excavator-loaders... the new Caterpillar No. 977 Traxcavator. The No. 977 has important new features which greatly increase productivity and earning power.

Features of the No. 977 Traxcavator

- 96-in., 2¼-cu.-yd. bucket.
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- Bucket tips back 40° at ground level to retain heaping loads.
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Now three sizes of Traxcavators are available for all your excavating and material-handling needs. They're *unit-built* machines, so efficient that you'll find they match or excel competitive equipment with nominally greater bucket sizes. You can choose the right Traxcavator for your job from the No. 933 (1 cu. yd.)—the No. 955 (1½ cu. yd.)—or the No. 977 (2¼ cu. yd.).

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Hydro Expansion

Utility requests license for $58 million project on Oregon's Lewis River

Another $58.7 million of private power construction for the Pacific Northwest appears likely as Pacific Power & Light Co. announced a license request to the Federal Power Commission for a 256,000-kw hydro project on the Lewis River north of Portland, Ore. The company targets April for the construction start and late 1958 for initial power generation.

Also announced was the company's application to FPC for permission to study another hydroelectric project still higher in the Lewis River watershed for a contemplated 74,000 kw.

The immediate development, known as Swift Project, will be comprised of two power houses and a 2,000-ft long earth and rock fill dam creating a 740,000 acre-ft reservoir. Power Plant No. 1 at the foot of the dam will have three generators totaling 189,000 kw. Its tailwater will run 3½ miles downstream by canal to Plant No. 2 where two generators are to put 67,500 kw on the line. Water will then flow into the Yale reservoir.

Swift Dam will be 510 ft high, more than 2100 ft thick at its base and will contain 16,000,000 cu yd of fill.

The future development, named the Meadows Project, would collect water from four Lewis River tributaries through a system of five dams and two power houses.

Bechtel Corp. experts assisted power company engineers through two years of exploratory work on the Swift Project. The addition of Swift to PP&L's Yale and Merwin Projects will develop 38 miles of Lewis River watershed in a 1,000 ft fall.

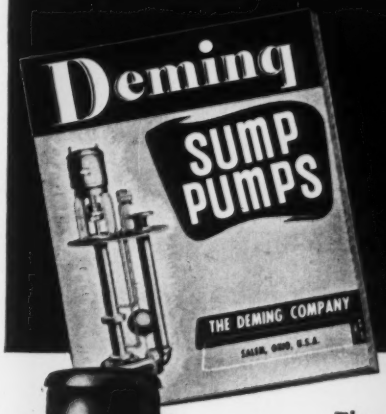
California Floods Caused $24 Million Road Damage

California State Highway Engineer George T. McCoy has estimated flood damage to the state's highways and bridges from late December river rampages will total some $24.5 million.

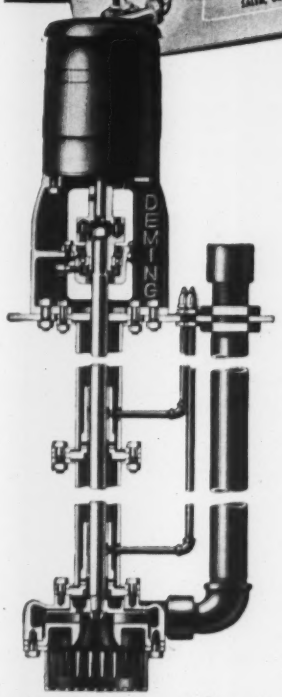
He reported emergency repairs on federal aid system highways will cost $3 million. Contracts for this work were let without taking bids in order to avoid a delay of about three weeks.

McCoy said restoration of highways and bridges on federal aid routes will cost $17 million. Emergency repairs on state highways, not in the federal system and exclusive of county roads and city streets, will cost $500,000 and restoration of these roads to normal status will cost $4 million.

SUMP PROBLEM?



New DEMING Sump Pump Bulletin 4500 Can Help to Solve it!



The New Deming Bulletin 4500 can help you to select the most efficient unit for a specific sump pump job. Contents of the 8-page bulletin include illustrated construction features of Deming Sump Pumps, information on Single and Duplex types, Size and Horsepower Recommendations for Various Ratings, Standard Dimensions of Units, information on Control Equipment, Specifications and other useful data.

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The U.S. Air Force Paves a

Since the construction start on the first of 25 contracts in January, 1954, contractors for the $60-million Plattsburgh Air Force Base, in northeastern New York State, have pushed work crews two 8-hr shifts per day in excavating 4,500,000 cu yd of material for grading and have laid 550,000 cu yd of concrete. They will wind up 1955 with more than 70% of the big base completed.

Having served as one of the oldest and most historic posts of the U. S. Army, rapid transition of Plattsburgh Barracks from army post—to college—to airbase is a notable example of peacetime Corps of Engineers operations.

Declared surplus by the Army in 1946, the installation was conveyed by the War Assets Administration to the state in April, 1950, for educational purposes, and the site became known as "Champlain College." Then in February, 1952, the Air Force, with the assistance of the Corps of Engineers, began a study of possible airbase sites in the area that might accommodate two medium bomber wings of the Strategic Air Command, with additional facilities for auxiliary tanker aircraft for air-refueling.

After investigation of several sites, only one seemed to offer everything that was sought by the Air Force—that was the site of the Plattsburgh Barracks. In addition to 723.61 acres occupied by the old post, some 1,550 acres of adjacent land to the west, between the Saranac and Salmon Rivers, were available for the new base. The final factor in favor of the site was the existence of 169 buildings on the old location that could be used, thus saving the government more than $8 million. Acquisition of land necessitated moving a portion of State Highway No. 22 and relocation of a section of the Chateaugay & Freydenburg Branches of the Delaware and Hudson Railroad, but even with these expenditures anticipated, the site offered more than any others considered.

The government, acting on the authority of a "recapture clause", took over the land and had construction under way by the January, 1954, date.

Some idea of the scope of operations involved may be seen in the following:

A) Runway—A single concrete strip, 11,760 ft long and 300 ft wide designed for 100,000 lb. dual-wheel loading, with a 14-in slab for 1,000 ft at each end of the runway and a 13-in slab for the remainder.

B) Taxiways—Total length of taxiways is approximately 16,000 ft including connecting taxiways at runway ends, two cross-over taxiways and one along the apron edge. They will be 75 ft wide, of concrete 14 in. thick, with 50-ft stabilized shoulders consisting of a compacted subgrade, a 6-in. sub-base course of selected material, a 3-in. base course of water-bound macadam and a 2-in. surface course of hot plant mix asphaltic concrete.

C) Parking Apron—8,825 ft x 1,082 ft of heavy-duty concrete 14 in. thick. Hangar aprons also are being provided of concrete 13 in. thick.

• **Joint-venture on paving** — Airfield grading, paving and railroad construction, a $9.5-million contract and the first to be let, was awarded to Winkelman-Tompkins-Jones, of Syracuse, N. Y., a joint-venture firm composed of D. W. Winkelman Co., of Syracuse, N. Y., J. A. Jones Construction Co., Charlotte, N. C., and C. H. Tompkins Co., of Washington, D. C.

With 15 tractor-drawn, 15-yd scraper units; seven self-propelled, 12-yd scraper outfits; five push tractors; four independent dozers and 12 motor graders, the joint outfit placed an average of 30,000 cu yd per day, hitting a maximum of 40,000 cu yd in one 16-hr period. Compaction was accomplished with four 50-ton tractor-drawn, rubber-tired compactors. Water for compaction was applied with three 5,000-gal water wagons built by mounting the tank on a scraper or bottom-dump body and fitting it with a 4-in. gasoline powered spray pump.

Nearly all of the apron and taxiway was in cut, and most of the runway also involved cutting. The only fill on the project was a section 1,000 ft wide at the base and roughly 3,000

a Valley

ft long, which was filled to a maximum height of 33 ft. Thus, practically all of the 4,500,00 cu yd of excavated material was placed on this single embankment, with haul distances ranging from ¼ to 1¼ miles.

Compaction requirements in fill areas—based on AASHO Standard Methods T-99-49—were 90% in shoulder areas, 95% under all paved and future paved areas. In cut areas, a density of 95% was required to a depth of 24 in. The soil at Plattsburgh, a medium to fine sand with a trace of silt, has Procter values of 105 to 115 pcf at 8 to 10% moisture. In cut areas, excavated material varied in moisture content from 3 to 6%, and since optimum moisture varied from 8 to 10%, approximately 15 gal of water per cu yd were required to bring the material to optimum moisture. This worked out to 225,000 gal per shift, which were supplied from a sump excavated at the toe of the embankment.

Even with the unusually close moisture and density control necessary on the fill, placement in two 4-to-5-in. loose layer lifts, wetting conducted from the nearby sump and rolling operations—using the four 50-ton units—compaction costs were held to a fairly low $.10 per cu yd, as compared with the normal cost of about $.15 in the area.

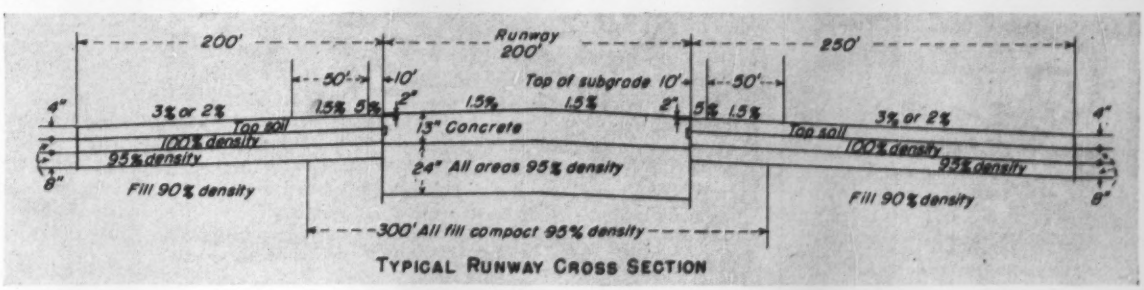
Later, for wetting subgrade, haulroad sprinkling and other dust control operations, four bottom-dump units were fitted with 4,000-gal tanks. These highly mobile wagons were loaded at a high-speed (one minute) filling station. Supply at this station was provided by Plattsburgh city water pumped into a 5,000-gal gravity tank from which wagons were filled through a 10-in. gate and elephant trunk.

• Paving operations at high speed—The same composite company placed from 2,800 to as much as 3,600 lin ft of 14-in.-thick, concrete slab 14-ft wide per day. Production was greatly increased by installation of special flood light outfits that "light up the job like a ballpark." Two such units—a 37½-kva diesel generator supplying twenty 1,500-watt lamps mounted on a 30-ft tower—were used on the project.

Design criteria call for pavement to be designed for 100,000 lb. loading on dual wheels spaced 37.5 in. on centers having 267 sq in. of contact area per wheel. Based on a subgrade modulus of 300, this loading required a pavement of 14 in. depth, with a 10% reduction in the area between 1,000-ft-long sections at each end, with the concrete developing a flexural strength of 720 psi at 90 days.

Load tests were made on the subgrade in the area designated as the initial section, and paving operations were started in August, 1954. All concrete placement during the first year was done on cut sections to conform with specification of six to nine months waiting time on all fill areas of greater than 5 ft depth.

Limited supplies of commercially produced aggregates in the Plattsburgh area led contractors to elect manufacture of their own. An acceptable gravel bank was found on the south side of the Saranac River, seven miles from



TYPICAL RUNWAY CROSS SECTION

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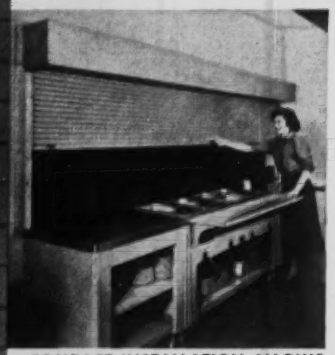
Make Every Inch of Counter Count

WITH COOKSON EXTRUDED ALUMINUM COUNTER DOORS



COMPACT INSTALLATION ALLOWS FULL USE OF OPENING

Preference for Cookson Aluminum Counter Doors is unmatched among architects everywhere. One big reason is their basic design, which provides a full, unobstructed opening. They roll up and out of sight, away from dirt and dust, yet require no costly between-wall recesses. Every inch of counter space counts. Durable, attractive "Alumilited" finish requires no paint or maintenance, affords permanent, lasting beauty. Get full information today on Cookson Counter Doors — first choice for schools, cafeterias, offices, ticket windows, and specialty applications of many types.

Write for special Cookson Counter Door Bulletin No. 402, or see our catalog in Sweet's.

Sweet's

THE COOKSON COMPANY
1537 Cortland Ave.
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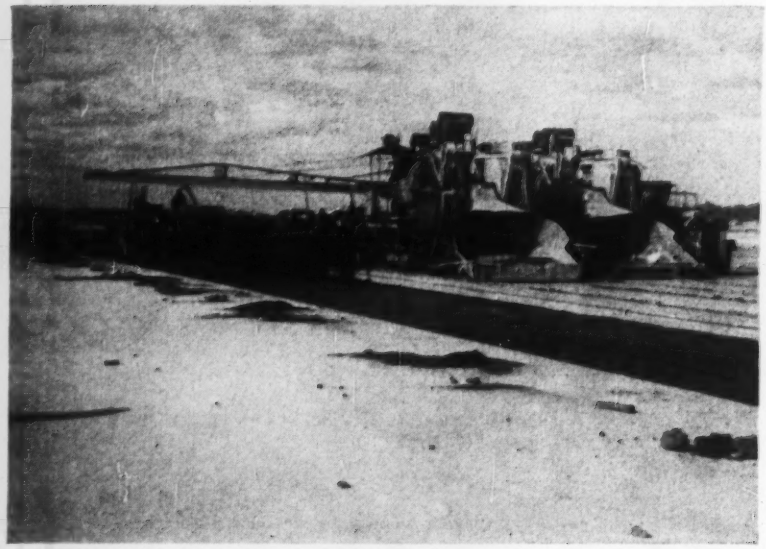
ROLLING SERVICE DOORS • GRILLES
"SERVIRE" FIRE DOORS
ALUMINUM COUNTER DOORS
SPECIALTY DOORS
WOOD ROLLING PARTITIONS

. . . U. S. Air Force Base



TWIN DUAL-DRUM MIXERS, equipped with a long boom, average better than 2,800 lin. ft of 14-in. pavement concrete, 14 ft wide for each two-shift, 16-hr day.

the project, and a portable crushing and screening plant was set up close to the river to assure an ample supply of water for washing operations. A 10-in. steel pipe supplies the water pumped directly from the river.

Much of the bank-run material is over 12 inches in size, so the plant was set up with a jaw crusher and a two stage roll crusher for reduction of the over sized material prior to conveyance to the washing plant. Here the sand is removed and pumped to a scalping tank, washed and stockpiled. Coarse aggregates are separated into #4–¾", ¾" and 1½"–2½" sizes and sent through separate stationary log washers, from which they are screen rinsed and stockpiled. Runoff from the plant is filtered through a system of settling basins and filter beds and back to the river.

• **Push-button batch plant**—The contractors installed a dry-batch plant capable of an hourly output of 130 batches at the northern end of the project. The all-electric plant receives sand and the three sizes of stone in four sub-grade hoppers served by three 24-in. conveyors. Capacity of the four-compartment bin is 125 tons, but aggregate storage capacity for the plant as a whole totals 3,000 tons. Capacity of cement silos is 2,800 bbls. total.

Each bin is controlled by a push button at the operator's station on top. Through these push-button switches, the operator can start or stop any belt unit independently of the others. For example, the operator, seeing that the sand bin is getting low, turns a 2-position swivel-chute at the top of one conveyor to the sand-bin position. Then, by remote control, he opens the gate under the sand hopper down below and simultaneously starts the conveyor in motion. When that bin is filled, procedure is reversed.

On supplementary duty, to maintain material flow despite uneven truck arrivals, a 2-yd crane is stationed between the receiving hoppers. Small auxiliary stockpiles of aggregate are piled beside the crane. All operations at the plant for two-shifts are handled by a dozen men including the foremen.

Sixteen 3-batch trucks are being used to haul aggregates and cement to mixers. Concrete is mixed on the runway by two dual-drum mixers, with a maximum mixing time of 75 seconds.

Sand-aggregate ratio is maintained at 30%, with a cement factor of 6½ bags and an air content between 4½ and 5%. Slump is maintained at 1½ in., though on warm days the mix was adjusted to result in a 2-in. slump in order to maintain the quality of the finishing.

Concrete from the mixers is spread with a screw-type mechanical spreader followed by a vibrating machine with eight electric vibrators served by a generator mounted on the equipment. Two transverse finishers, each with two oscillating screeds, are followed by hand finishers with long-handled floats, a longitudinal float finisher, burlap drag bridge and a machine that applies white-pigmented curing compound.

Duplicate finishing equipment is

THE BUFFALO-SPRINGFIELD K-45 KOMPACTOR

How to select compaction equipment

The logical question to ask yourself when you are ready to buy new compaction equipment is: "Exactly what do I need the equipment for and how will I use it?"

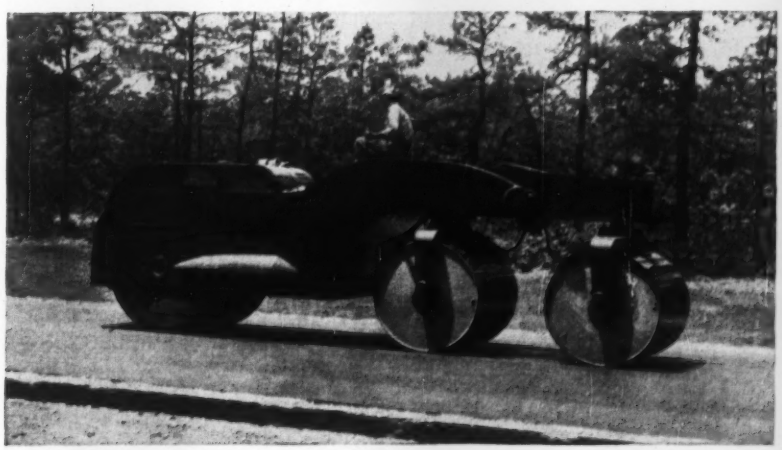
BASE FILL COMPACTION—This type of compaction demands equipment that will handle a wide variety of materials, give you the highest degree of compaction with the fewest passes. Buffalo-Springfield's revolutionary K-45 Kompactor is proving a real money-making answer for this type of work. It is self-propelled, relies on the "Interrupted Pressure Principle." All compaction effort is directed downward. Contractors testify they are meeting density requirements in one-fourth the time normally required with other compaction equipment.

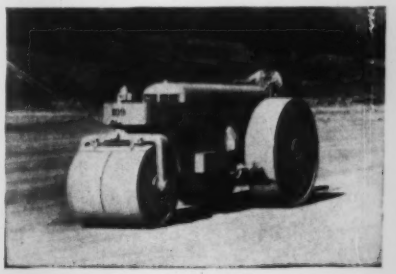
FINE GRADE FINISHING—Buffalo-Springfield offers six 3-wheel rollers, ranging in capacity from 5 to 15 tons, to handle the large variety of materials found in fills, subgrades and unfinished bituminous pavements. The variable-weight 3-wheel roller is ruggedly built for years and years of hard, maintenance-free work.

Buffalo-Springfield's thoroughly-proved 3-axle tandem "walking beam" roller provides up to 60% greater tonnage compacted per day in superhighway construction, airport and military establishment jobs where specifications are extra strict.

ASPHALT FINISHING—Two-axle Tandem Rollers are designed especially for all surface finishing jobs. Ranging from 5 to 16 tons, Buffalo-Springfield Tandems are used for

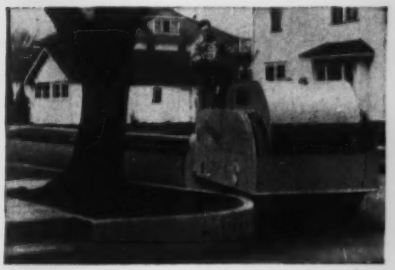
THE BUFFALO-SPRINGFIELD KX-3 AXLE TANDEM





3-WHEEL ROLLERS

heavy-duty highway and public works projects, and all types of finishing, maintenance and repair work. A wide selection of models for the biggest to the smallest jobs are designed for long-life and profitable operation.



TWO AXLE TANDEMS

SHORT ROLLING JOBS—Buffalo-Springfield's 3-5 ton portable roller is widely used for rolling driveways, sidewalks, parking and playground areas, and for patching and light finishing jobs. It is highly maneuverable and portable from job-to-job. Write today for full information on the type of equipment you need—or see your nearest distributor for an on-the-job demonstration.

3-5 TON PORTABLE TANDEM

The Standard *of Comparison*

BUFFALO SPRINGFIELD

SPRINGFIELD, OHIO

Good pencils mean BETTER TRACINGS and superior PRINTS

When big projects are at stake, use Graphite Saturated IMPORTED CASTELL

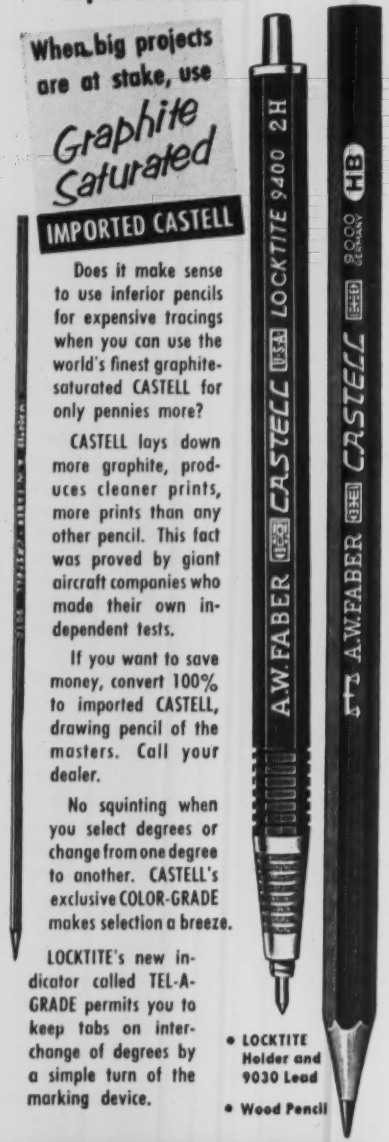
Does it make sense to use inferior pencils for expensive tracings when you can use the world's finest graphite-saturated CASTELL for only pennies more?

CASTELL lays down more graphite, produces cleaner prints, more prints than any other pencil. This fact was proved by giant aircraft companies who made their own independent tests.

If you want to save money, convert 100% to imported CASTELL, drawing pencil of the masters. Call your dealer.

No squinting when you select degrees or change from one degree to another. CASTELL's exclusive COLOR-GRADE makes selection a breeze.

LOCKTITE's new indicator called TEL-A-GRADE permits you to keep tabs on interchange of degrees by a simple turn of the marking device.



• LOCKTITE Holder and 9030 Lead
• Wood Pencil

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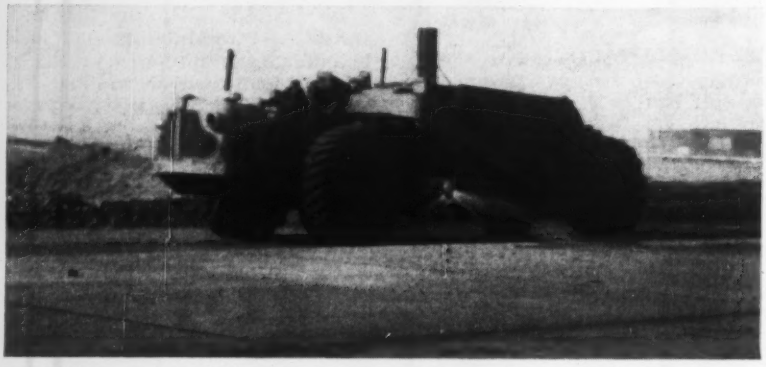


WATER TANK ON SCRAPER is just one of the many job-developed rigs that are eating up work schedules at the Plattsburgh Airbase.

held at stand-by to insure continuity during lane changes, with a motor crane used for resetting. A total of 15,000 lin ft of steel forms in 520-lb sections are on the job.

The Bero Construction Co., of Buffalo, N. Y., was awarded the $4.4-million contract for runway and apron extensions and started its portion of the project in January, 1955. Using equipment and methods already proven satisfactory on the Plattsburgh project, Bero changed only the method of subgrade preparation and batch plant layout. The company uses a mechanical subgrader instead of a towed subgrade screen as used by the Winkelman-Tompkins-Jones combine.

Bero's batching plant, set up on a railroad spur adjacent to the job site, consists of two aggregate bins equipped with aggregate scales, a 2-yd clamshell bucket rig for charging, one 400-barrel and three 600-barrel silos with undercar screw conveyors and scales and an 800-barrel cement dock. The plant has handled 1,251 batches in a typical 10-hr day with only one aggregate bin.

• **Things new and different**—Bero also developed his own water wagons, fitting three scrapers with 4,000-gal water tanks and sprinkler systems designed for both lateral and rear throw.

W-T-J hired Seals, Inc., of Baltimore, Md., for joint sawing and sealing. Seals equipment consists of a bridge unit on which two 12-in. saws are mounted on individually controlled dollies. The two separate motors are supplied by a 25-kw diesel

generator that is mounted on a truck along with a 600-gal tank for spraying cutting blades. The generator also supplies 500-watt floodlights mounted on the machine.

Seals designed its own diamond blades with which it is claimed to be averaging 1,000 lin ft of 3¼-in.-deep joint per blade.

Pavement Controls, Inc., of Cleveland, sawing joints on the Bero sections, also uses a bridge machine of its own design powered by a truck-mounted generator.

Located between the finishing machine and the longitudinal float is a bridge unit that is being watched with interest on the Bero job. Designed by Vibro-Tamper of Dallas, Tex., it creates a dent in the freshly struck-off concrete by lowering and raising a vibrating V-edged blade. The dent later is filled with mortar during hand floating and final finishing. Located on the line of the dummy joint, the purpose of the dent is to clear the narrow strip of coarse aggregate in the upper part of the slab to reduce the abrasive resistance to sawing. At this time its success has not yet been established.

• **In addition to paving**—Under present scheduling, there are 25 contracts covering construction of hangars, operation and administration buildings, utilities, dormitories and mess facilities, storage facilities, communications buildings, theater and officers club, mess and quarters. Demolition of existing facilities and flight hazards and also tree cutting play a part in the current operations, as well as rehabilitation of miscellaneous buildings of Plattsburgh Barracks.

In addition to the Plattsburgh Air Base project as it stands, plans for the future include expenditure of $20 million more for other facilities that include a hospital.

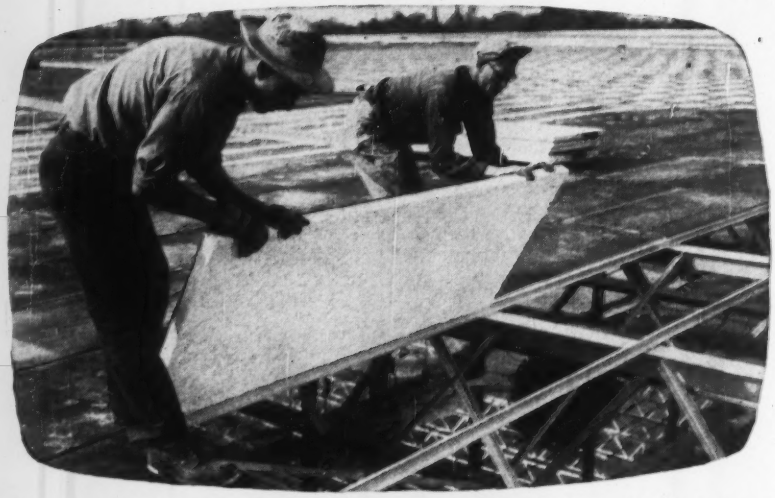
The principal architect-engineer firm employed on the project was Seelye, Stevenson, Value & Knecht in a combined venture with Shreve, Lamb & Harmon. This firm designed the entire airfield and approximately 90% of all buildings and utilities. The following firms were also employed: Urbahn, Brayton & Burrows on rehabilitation of Plattsburgh Barracks; Ziegler, Childs & Paulsen on design of a 134-bed hospital and Magoon & Salo on design of officers', NCO and airmen's clubs, bachelor officers' quarters and theater.

The work is being performed under the direction of Col. John T. O'Neill, District Engineer, Corps of Engineers, U.S. Army, New York District, and Lt. Col. Samuel H. Duerson, resident-engineer-in-charge, assisted by William Jennings.

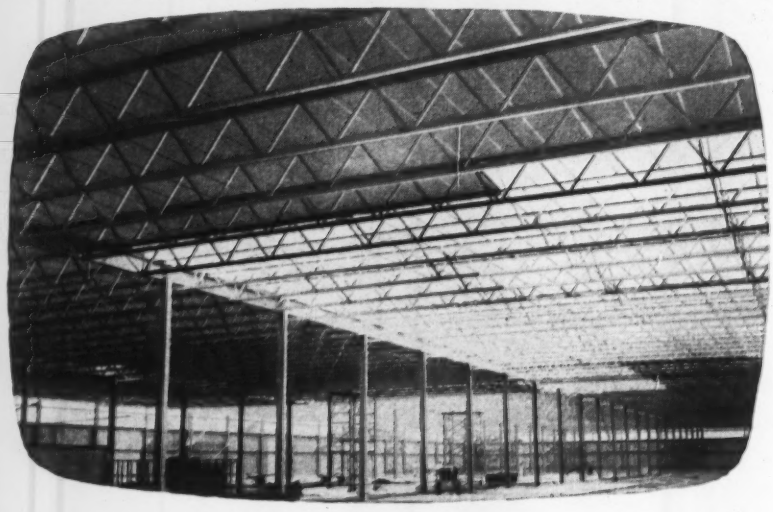
Who's Doing What and When

Contractor	Description of Work	Contract Cost	Time Schedule Start	Time Schedule Completion
1. Frederick Raff Co. Hartford, Conn.	Hydrant Refueling & POL Bulk Storage	$1,575,000	Feb. 54	Aug. 56
2. T. C. Bateson Const. Co., Dallas, Texas	Hangars, Operational & Administrative Bldgs. & Utilities	9,587,500	Feb. 54	July 56
3. Winkelman-Tompkins-Jones, Syracuse, N. Y.	Airfield Grading & Paving & Railroad Construction	9,458,000	Jan. 54	Aug. 56
4. Consolidated Constructors, Inc., New York, N. Y.	Dormitories, Messes & Communications Bldg.	2,746,300	May 54	Dec. 55
5. National Construction Co., South Boston, Mass.	Rehabilitation of Misc. Bldgs., Plattsburgh Barracks	794,600	June 54	June 55
6. Winkelman-Tompkin-Jones, Syracuse, N. Y.	Apron Paving Extension	1,097,300	Sep. 54	Dec. 55
7. Bero Const. Co., Buffalo, N. Y.	Runway & Apron Extensions	4,399,000	Jan. 55	Aug. 56
8. Arthur Venneri Co., Westfield, N. J.	Dental Clinic	170,700	Jan. 55	Dec. 55
9. T. C. Bateson Const. Co., Dallas, Texas	Additional Hangars, Operational & Admin. Bldgs. & Utilities	5,208,300	Jan. 55	Aug. 56
10. Arthur Venneri Co., Westfield, N. J.	Dormitories, Mess & Theatre	3,580,300	Jan. 55	July 56
11. Arthur Venneri Co., Westfield, N. J.	Special Weapons Training Bldg.	96,400	Apr. 55	Jan. 56
12. Tree Preservation Co., Inc., Elmsford, N. Y.	Flight Hazard Removal & Tree Cutting	58,000	Apr. 55	Nov. 55
13. Lew Morris Demolition Co., Flushing, N. Y.	Demolition of Coaling Station & Water Tower	24,000	Sep. 55	Nov. 55
14. Arthur Venneri Co., Westfield, N. J.	Ordnance Facilities	496,100	Apr. 55	Aug. 56
15. Consolidated Constructors, Inc., New York, N. Y.	Additional Ordnance Facilities	1,019,300	Apr. 55	Aug. 56
16. Arthur Venneri Co., Westfield, N. J.	Officers Club & Mess & Quarters	998,300	Apr. 55	Mar. 56
17. County Electric Co., Inc., Field Electric Co., Inc., Carroll Retner Corp., Port Chester, N. Y.	Runway and Taxiway Lighting	137,000	Mar. 55	Aug. 56
18. Pearson Co., Inc., Brookline, Mass.	Railroad Relocation	158,100	Apr. 55	Dec. 55
19. Michael Contracting Co., Brooklyn, N. Y.	Additional Rehabilitation of Misc. Bldgs., Plattsburgh Barracks	658,200	Apr. 55	Mar. 56
20. Frederick Raff Co., Inc., Hartford, Conn.	Additional Hydrant Refueling Facilities	287,300	June 55	Aug. 56
21. Paul M. Sterling, New York, N. Y.	Additional Rehabilitation of Misc. Bldgs., Plattsburgh Barracks	630,200	June 55	Dec. 55
22. Michael Cont. Co., Brooklyn, N. Y.	Cold Storage Warehouse & Technical Laboratory	312,300	June 55	July 56
23. Arthur Venneri Co., Westfield, N. J.	Hospital & Utilities	2,998,300	Oct. 55	Nov. 57
24. Paul M. Sterling, New York, N. Y.	Addition to Base Maintenance Shop	166,900	Nov. 55	Aug. 56
25. Bero Const. Co., Buffalo, N. Y.	Additional Paving & Grading	1,283,800	Nov. 55	Nov. 56

When **Tectum** goes down



job progress looks **up!**



148,000 square feet of 2-inch Tectum tile were installed on bulb tees at this Continental Can Company, Inc. fibre drum plant. Schmidt, Garden and Erickson of Chicago, Ill., architects and engineers; contractor, La Salle Construction Company, also of Chicago; and installation by Chaffee Roofing Company of Detroit.

there's absolutely nothing like the...

Tectum Method

For Plants • Commercial Buildings • Institutions • Homes

For Continental Can Company, Inc.—a new fibre drum plant located at Midland, Michigan. Engineered to utilize automation to its fullest, the most modern of construction methods were also employed in the erection of this spacious building.

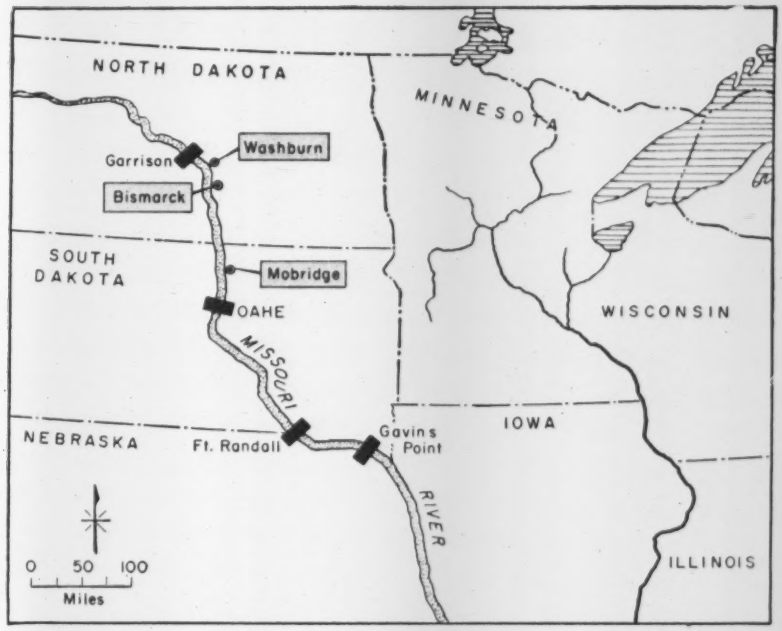
One example is Tectum. More than a product, Tectum is a method—a method that saves time, labor and money. Here, in a single plank, all "overhead" requirements are met. *First*, it's a roof deck; *second*, it's insulation; *third*, Tectum is acoustical.

Note the ease with which Tectum is installed, as shown in the upper photograph. When Tectum goes *down*, job progress looks *up*—and your building is "under roof" on or before scheduled completion date. Further time is saved because roofing can be installed immediately after Tectum is applied. And, further savings are effected because Tectum weighs less and permits you to use lighter, more economical spans.

There are many other chapters in the "Tectum Story." Read them now—write for a copy of the Booklet "In the Market for a Quality Roof Deck?", or call your local Tectum distributor. Tectum Division, Peoples Research and Manufacturing Co., 506 South Sixth Street, Newark, Ohio.

On the Missouri,

as major dams are completed and put to use and river regimen is permanently changed, cities are seeing how . . .



River Control Affects Water Supplies

Missouri River dams are altering radically the Big Muddy's character, posing problems for communities using the river for water supply.

Bismarck, N. D., and Mobridge, S. D., are the principal municipalities involved, but Washburn, N. D., and eight or 10 smaller communities also have lesser problems.

One element of the Bismarck situation is the bustling growth of the community. The other: Garrison Dam, 77 river miles upstream.

The North Dakota capital city, located in the oil-happy Williston Basin, has been outgrowing its water supply. Its treatment plant with two 14-in. intakes could handle a maximum of 6 mgd, barely adequate for the city's needs.

• **Regulated flow**—When the Missouri River was pinched down by regulation at Garrison Dam, reduced head cut the pumpage at the Bismarck plant to 4.5 mgd—not enough to take care of the community. To avert a water shortage, Army Enginers regulated Garrison Dam so that enough water covered the Bismarck intakes to enable the plant to pump its maximum capacity. To enable Bismarck to get 10 cfs, Army Engineers found it necessary to release an extra 5,000 cfs at Garrison on occasion. This extra water was put into the river in the summer of 1954 and again in the fall and winter of last year.

In return for the increased flow, Bismarck pushed plans for a new water plant that it had been considering for some time. New intakes are being set low enough so that regulation of the river will not interfere with the city's supply—four 20-in. lines set 10 ft below the minimum water level of record.

The new Bismarck plant will have an ultimate capacity of 12 mgd; the old plant will be kept in standby condition. Combined capacity should take care of the city's needs for some time. A feature of the new plant—resulting in a substantial saving—is the elimination of primary settling basins. This is possible because Garrison Dam traps much of the sediment in the water.

The new plant is now in the design stage.

• **Flooded intake**—Mobridge, too, had outgrown its water facilities. And one of the big Missouri River dams will affect the facilities to be built.

Biggest community on the Oahe Dam pool, Mobridge has a population of but 5,000. It is here that U. S. Highway 12 crosses the Oahe pool. The main line of the Milwaukee Railroad also crosses at Mobridge, and the railroad maintains divisional headquarters there, with elaborate yard facilities and a roundhouse.

The city, the railroad, and a Montana-Dakota Utilities Company power station all take water from wells at the river's edge. In tackling the relocation problem, Army Engineers did so in terms of a single intake to serve all three users. Studies showed this solution would be more economical; the users agreed.

The schedule of building Oahe Dam and filling its pool posed a slight complication. Until after closure comes in 1958, the intake of necessity will have to be below the level of the river as is now stands. After the pool is filled, such an intake will be under some 100 ft of water.

It tentatively has been decided that the intake will be a vertical shaft of concrete, 14 ft in diameter. Sunk into a hill chosen for its geological stability, the shaft will be about 100 ft deep. Three horizontal intakes will lead out to the river, tapping it at three different levels. Each horizontal intake will be 16-in. dia.

Design, as tentatively worked out, will give flexibility in dealing with deep pool stratification as to turbidities, and temperatures, Army Engineers say.

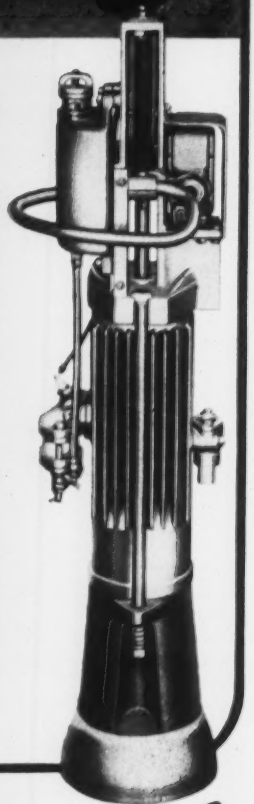
• **Improved facilities**—Beyond construction of the intake—which Army Engineers plan to build themselves—

GASOLINE BARCO RAMMER

Barco Performance Pays Dividends!

Job Finished on Time!—When project specifications call for SOIL COMPACTION, Barco performance can't be beat! In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—RAPIDLY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Atomic Energy, Air Bases, Hydroelectric Power and Flood Control Dams, Highways, Toll Roads and Freeways, Bridges, Buildings, and Housing Developments. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour.

Ask for a Demonstration—We will be glad to arrange a demonstration for you; see our nearest distributor or write. SEND FOR A COPY OF CATALOG 621.



BARCO *Manufacturing Co.*

514B Hough Street — Barrington, Illinois

settlement will be on a lump sum basis for building supply lines into town and a new treatment plant. The city will construct the treatment plant and, in turn, is making an agreement with the railroad to supply it with treated water. The power company receives raw water.

In relocation work, Army Engineers are bound by doctrine that new facilities cannot be more elaborate than those which they replace. They cannot, for example, finance an increase—badly as it is needed—in Mobridge's water capacity. Despite this, Mobridge will have its water supply almost doubled in the shuffling around.

The new facilities will have the combined capacity of the existing city plant plus those of the Milwaukee railroad. And with dieselization of its road, the Milwaukee uses only a small fraction of the water to which it is entitled; the railroad will give all it can spare of its share of water to the city.

Construction of needed water facilities in Mobridge is expected to start in 1956, with completion anticipated early in 1957.

• **Timed releases**—Washburn's trouble is sandbars. The difficulty always existed, even in the days of an uncontrolled river. The city long has had a dredge on hand to dig an opening through a sandbar which formed in front of its intake each fall when the river level went down.

With control at Garrison Dam, the fall fluctuations have been more extreme—and abrupt. From 30,000 cfs, flow is cut to 8,000 in a matter of a few days. The consequence was that the sandbar threatened to form and block off the water supply before the dredge could open a channel.

This problem has been solved by rescheduling the control of flow from Garrison. From 30,000 cfs, the water is lowered to 15,000 cfs and held there for five days. This permits the dredge to open a channel. Thereafter the water is taken on down.

Similar juggling of river discharge is done for benefit of smaller communities.

Brig. Gen. W. E. Potter is Missouri River Division chief. Head of the Garrison District is Col. Henry Hille. Hydraulics procedures for Bismarck are under the general direction of Mr. Pafford and Warra of the division's hydraulics branch. Mobridge's relocation is under the supervision of the Omaha District, of which Col. Thomas J. Hayes, 3rd, is district chief. Taking part in Mobridge relocation activities and construction work are Edward Soucek and Logan Woolley of the Omaha District's engineering division and John Sibert, Jr.

RADIO helps build roads, level rough country, fight fires in the California mountains

Archibald's two-way radio-equipped supervisory vehicles, and special units such as the roving greasing truck (above), coordinate as many as 12 widely separated projects with the San Carlos head office. Radio keeps all units under constant supervision, saves time, money.

J. O. Archibald Co., San Carlos General Engineering Contractor Uses G-E 2-Way Radio . . . Keeps Equipment Working A Dozen Jobs At One Time.

ORDERS from the head office of the J. O. Archibald Company are dispatched to supervisors on the job by two-way radio. Company operations, sometimes widely separated, cover the San Francisco peninsula area and surrounding mountain districts. Yet all projects are under radio direction—through two-way radio equipped supervisory vehicles.

Archibald operates under private and government contracts for road building, pipeline installation, and earth moving projects of all kinds. When needed, company equipment helps fight fires threatening vital lumber lands.

"Radio Has Paid For Itself Many Times . . ."

"Our G-E radio has paid for itself many times over", say Archibald officials. "It saves us time, is convenient, speeds parts and men to projects, permits prompt response to emergency calls." The company reports excellent coverage with low band equipment—a 60 mile average from base to car, at times up to 60 miles car to car. A remote relay transmitter atop a mountain four miles from the base station helps overcome terrain interference.

Progress Line Offers New Advantages

The new G-E Progress Line of two way radio saves money on maintenance through faster servicing, protects from obsolescence because chassis are interchangeable. Changes in frequency, power, type of reception are made quickly at a minimum cost. See your local G-E Communications Counselor for full details. Or, write to: *General Electric Company, Communication Equipment, Section X2216-19, Electronics Park, Syracuse, New York.*

2-WAY MOBILE RADIO

Progress Is Our Most Important Product

GENERAL ELECTRIC

PIPELINE TO SAVINGS

or...how safety know-how works for world's

YEAR IN, year out cooperation with American Mutual's Safety Engineers has resulted in fewer accidents . . . more profits for this Bartlesville, Oklahoma, oil and gas lines contractor with five "spreads" operating country-wide.

H. C. Price Co. *knows from experience* the value of an integrated safety program in keeping profits *up* . . . accident rates *down!* That's why their entire organization has worked hand in hand with our safety engineers ever since they looked to American Mutual for Workmen's Compensation coverage nearly a decade ago!

One of H. C. Price Co.'s modern ditching machines makes steady progress on a pipeline job for Texas Eastern Transmission Corporation, just south of Jackson, Mississippi.

Sideboom tractor handles a length of 30-inch diameter steel pipe for American-Louisiana Pipeline Company near Slaughters, Kentucky. Welders are at work in rear.

A M

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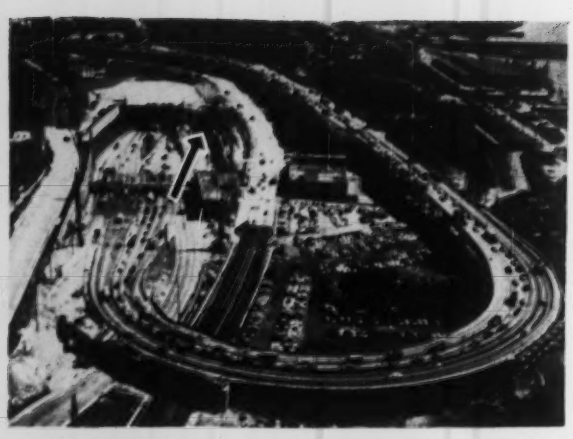
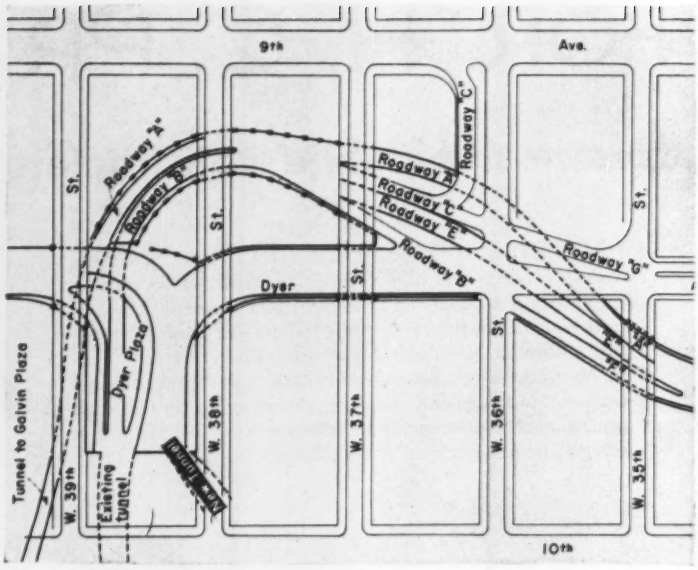


It Goes In Here . . .

On the New Jersey Side of the Hudson River, city-bound traffic pours down a circular ramp known as "The Helix" (now being widened) to reach portals of three tubes of New York City's Lincoln Tunnel.



$30 Million Answer to a Reversible T

It was the notion of converting the two-tube Lincoln Tunnel in New York City into a three-tube installation with a reversible-traffic center tube that caused all the trouble for engineers charged with handling and dispersing traffic at the two ends of the tunnels.

And solution of this approach problem is a sizable problem in itself—about $30 million worth, to be specific on a $100 million project. It will entail excavation of more than 500,000 cu yd of earth and rock; use of 3,000 tons of steel in five bridges and widened viaducts; construction of a 1,500-ft-long tunnel up to 80 ft deep by cut-and-cover methods; placing of 77,000 cu yd of concrete, and 237 prestressed concrete panels; employment of more than 700 men at peak.

Genesis is in the tremendous cross-river traffic already carried by the Lincoln Tunnel. In 1947, it totalled 10,635,000 vehicles of all types. By 1949, it was 12,963,000. In 1955 it will reach an estimated 21,400,000.

Pleased by the growth of traffic at the facility, but worried by the peak-hour traffic tieups around the tunnel entrances on either side of the mile-wide Hudson River—jams that sometimes extend for miles in an already jam-packed urban area—Port of New York Authority engineers finally decided the answer would be a third tube, running parallel to and slightly south of the existing two tunnels. Thus they would have six traffic lanes available—and by reversing the direction of the center tube, could have four lanes in the direction of heaviest traffic flow.

• **Geography**—A bit of map study is almost necessary for understanding of what reversing the flow of traffic will mean:

The existing twin tubes of the Lincoln Tunnel (one opened to traffic in 1937, the other in 1945) go underground between 39th and 38th St., on the Manhattan side of the Hudson River, coming up together into a plaza cut into the hard basalt rock of the New Jersey Palisades in the cliff-clinging community of Weehawken.

The third tube, now under construction (ENR June 16, p. 42) will parallel the two existing tunnels, taking off under 38th street in Manhattan, and debouching into the widened plaza at Weehawken.

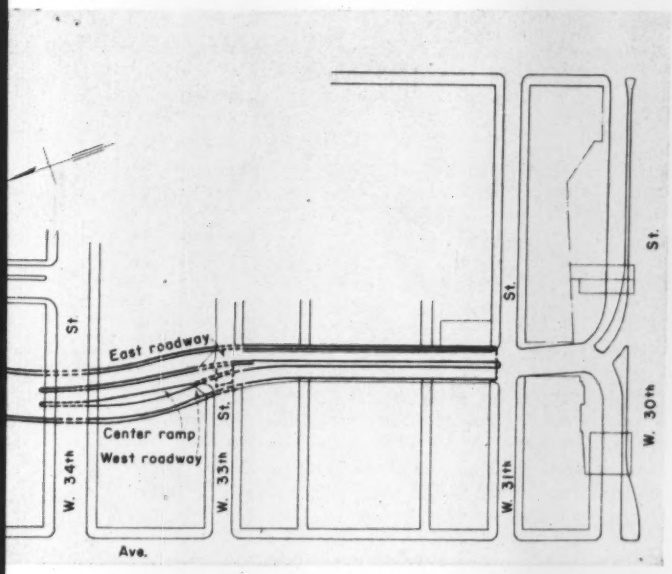
On the New Jersey side, then, the problem of handling the third tube is almost simple:

The plaza must be widened an additional eight traffic lanes; five more toll booths must be added, a new ramp exit built. The major new construction work, will be the widening (by one 12-ft lane) of an inclined ramp—known to PNYA employees as "The Helix"—that makes a complete 360-deg swing upward from the toll plaza to the top of the Palisades, 160 ft above the tunnel portals. At this point, the Helix feeds traffic into a six-lane freeway that connects directly with the New Jersey Turnpike and a number of other major north-south arteries.

• **City spells trouble**—A much more complex problem—from the standpoint of construction operations and engineering—exists on the Manhattan side.

Probably the key to it—in addition to the normal problems of doing any construction in a highly congested urban area—is the fact that the two existing tunnels are not fed from the same entrance plaza. The present westbound tunnel (the northerly of the two now in service) gets traffic from a plaza (Galvin Plaza) that is about a block and a half west of the exit plaza for the eastbound tube. The third tunnel, coming under 38th street from the river, will also enter into the eastbound plaza (known as Dyer Plaza), between 9th and 10th Avenues in Manhattan.

• **And here's why**—When it is considered that what PNYA proposes to do—once the third tube is completed—is to reverse the flow of traffic in what will become the center tunnel, the traffic-handling problem is at once apparent. At night, when westbound tunnel traffic is heaviest, part of the traffic must continue to use the Galvin Plaza, but some must be diverted



And it comes out here . . .

Through this maze of ramps, underpasses and city streets, vehicles will be dispersed into the heart of Manhattan Island. New third tube will enter plaza at arrow; center tube, next to it, will be reserved for heavy outbound traffic in evening. Northernmost tunnel entrance is off picture at left.

Tunnel Traffic Problem

to Dyer Plaza, which will then be handling two-way flow in a comparatively narrow space (200 ft wide).

Both of the tunnel plazas are in the heart of the heavily congested, highly industrialized West Side of Manhattan, an area where railroad yards, the great riverside docks, huge warehouses and produce shipping centers, and innumerable small manufacturing plants already generate an enormous flow of vehicular traffic.

When the tunnels were first opened, the Port Authority cut a new street—now known as Dyer Ave.—running north-south from 42nd St. to 34th St. in mid-block between 9th and 10th Ave., to serve the eastbound tunnel exit. Since that time, other facilities have been added, notably a spiral ramped entrance to the Authority's bus terminal between 41st and 40th St. and 8th and 9th Ave.; and another new street was cut through the block between 10th and 11th Ave. to provide further access to the westbound Galvin plaza.

• **Here's how**—The answer Port Authority engineers under Chief Engineer John Kyle decided upon was to provide a new road, roughly paralleling the existing Dyer Ave., but extending further to the south—to 30th St., where New York City eventually hopes to build a crosstown expressway to bridge Manhattan Island.

This route involves heavy rock excavation—since the new road must go under Dyer avenue itself and under a number of cross-streets in order to enter Dyer Plaza at the proper level; construction of five new steel-truss bridges—one of which will be a double cantilever structure over the Pennsylvania Railroad yards; construction of an additional cut-and-cover tunnel to connect Dyer and Galvin plazas, and extensive replacement of existing retaining walls, barriers, and some existing bridge structures.

• **And so to work**—After more than a year of preliminary work, which included the clearing of buildings from the proposed new right-of-way, the Gull Contracting Co. of New York, began actual construction of the new approaches early in February, 1953. By virtue of four separate contracts, Gull is doing all of the work on the Manhattan approaches.

With M. William Gilbert as chief engineer, and Konrad Hegemann as general superintendent, Gull started work simultaneously on the various sectors of its contract, and has carried on that way—with at least four operations going on at once—almost exactly on schedule ever since.

To do that, the contractor has used and continues to use a relatively large stable of equipment, which includes: Three crawler shovels, one of 2 yd capacity, the other 1¼ yd; 2 crawler cranes; 2 truck cranes; 8 compressors; 20 heavy rock trucks; four other trucks; a tractor-loader; plus as many as 20 wagon drills, hand drills, dust machines and other equipment.

To speed his work, Hegemann has four times dismantled his shovels, put the pieces in holes blasted out of the rock below street level, and reassembled them there. Plagued by another usual big-city construction headache—lack of storage space—the contractor hit on the expedient of putting all his compressors into one vacant area in the middle of the job, feeding all air equipment from this bank for distances of as much as 800 ft, through the use of hoses and surge tanks.

Greatest problem for the contractor, however, was that the innumerable business establishments that line the streets in which he had to work could not be put out of business by the construction, so that all streets had to be kept open at least for local traffic throughout the work. (As an oddity, one of the buildings is a storage place for the antique horse-drawn cabs that still ply Central Park—and also serves as a stable for the horses.)

So all excavations had to be bridged immediately, and the two-block-long cut-and-cover tunnel that runs from Dyer Plaza to the tunnel ventilation house where the under-river tunnel will connect, had to be decked with heavy 12 x 12-in timbers as soon as excavation was completed.

(Continued on page 48)

. . . Lincoln Tunnel

This meant that the contractor had double work to do—cut the tunnel, insert heavy steel members to support the decking and place the decking, then remove the decking in spots as finishing work proceeded, to give room for his equipment to work. Incidentally, this section of tunnel has been completed now, right on schedule.

Open-cut excavation was decided upon, because the island's bedrock shelves off very rapidly in the area—in some places being more than 70 ft below the filled-in surface of the ground at the river's edge. One added difficulty was building a bridge-under-a-bridge where this tunnel crosses under a four-track freight line of the N. Y. Central Railroad—which, in turn, is in a rock cut about 22 ft below street level.

On street crossings elsewhere, the contractor adopted a cost saving expedient: Instead of putting in heavy falsework to support temporary structures, he excavated the hard Manhattan schist in such a way as to leave blocks of rock standing in the center of the proposed roadway, using those blocks to support temporary bridges until permanent structures could be installed. The blocks then were taken out with hammers.

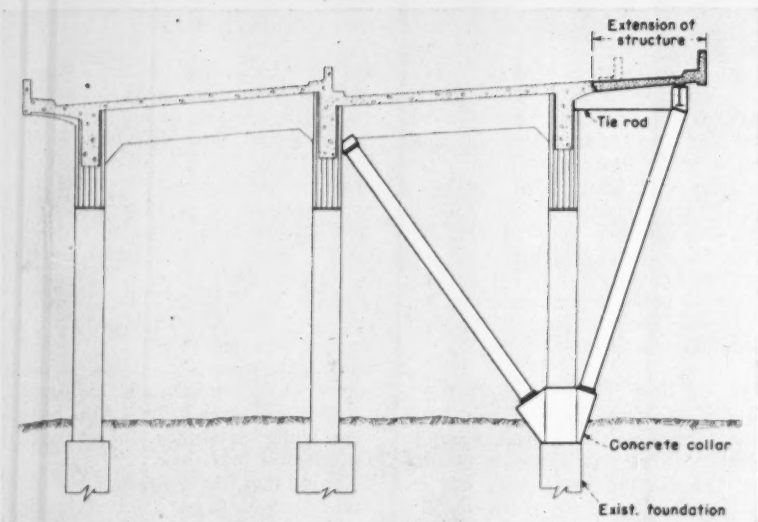
• **Excavation**—Excavation of any kind is of course always a problem in a city such as New York, because of the multiplicity of utility services under the streets. Sewers, electric and gas lines, water supply, television cables, steam lines, and many others form a tight network under the streets, and none can of course be interrupted.

In many cases, the lines are carried across the temporary structures in special suspenders—in some cases, sewer lines have been turned back on themselves or rerouted, where grades could not be made to conform with flow patterns.

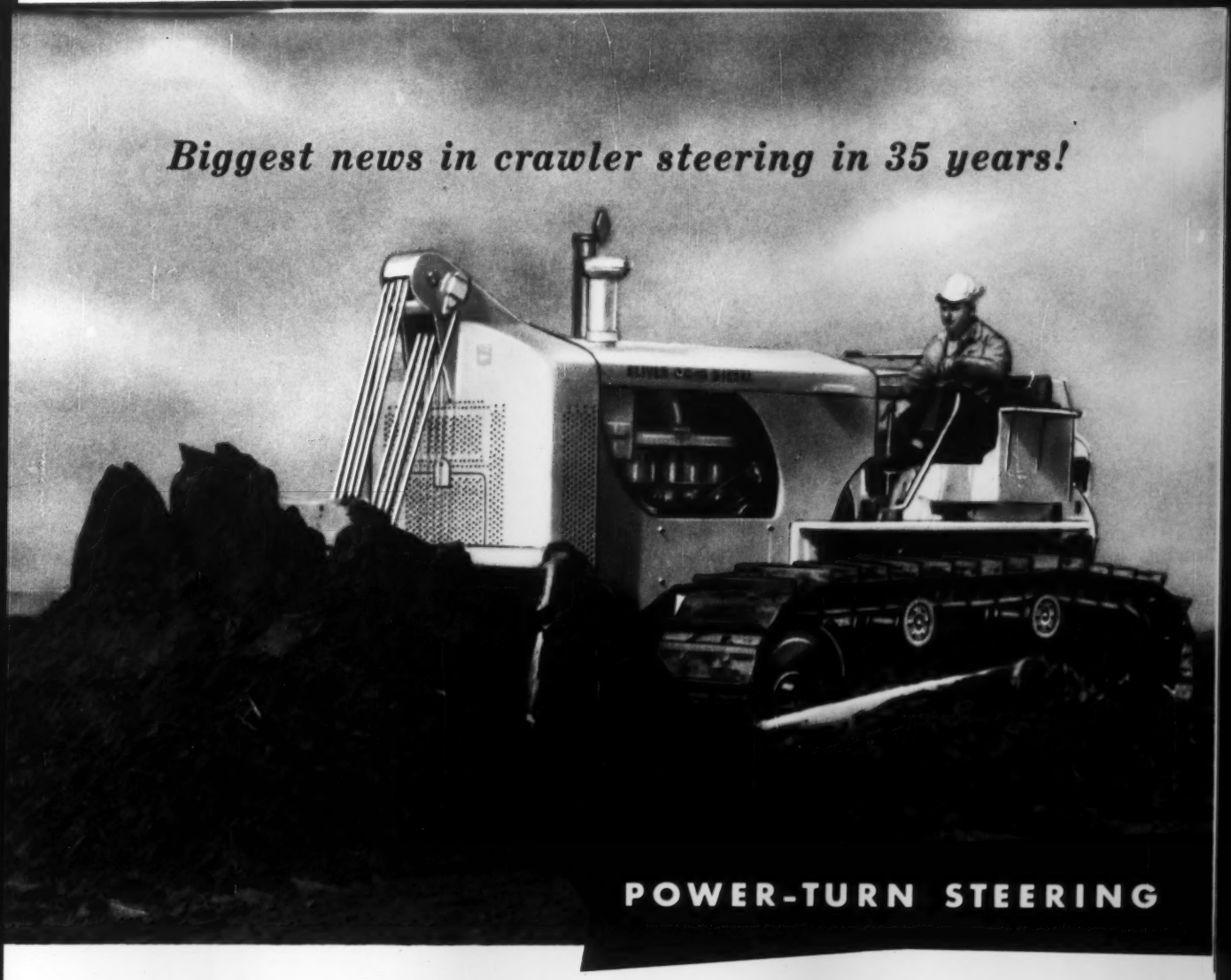
More difficult than this is the problem of surrounding, privately held property. Excavation of the roadway to its full width brings it right to the building lines of most of the structures on either side. And although many of these buildings are substantial—some of them run to 20 stories or more in height—their foundations are almost at ground surface, where the natural rock level existed. To prevent damage, the contractor has had to pin almost every inch of the sidewalls, using 1¼-in. dia. reinforcing bars, stuck into drill holes and grouted into place.

Blasting under these conditions has also been a problem. In one area,

PORTALS OF ALL THREE TUBES are located at the same plaza on New Jersey side, where the area is being widened by eight traffic lanes to accommodate the new tunnel (right). Massive rock wall that stood on the line where the crane is working had to be removed; five more toll booths are being added.



ANSWER to widening elevated roadway on New Jersey approach without using new foundations was extension of old footings and erecting of new inclined pipe-columns to support extra width. Column on inside of old concrete pillar takes introduced thrust.



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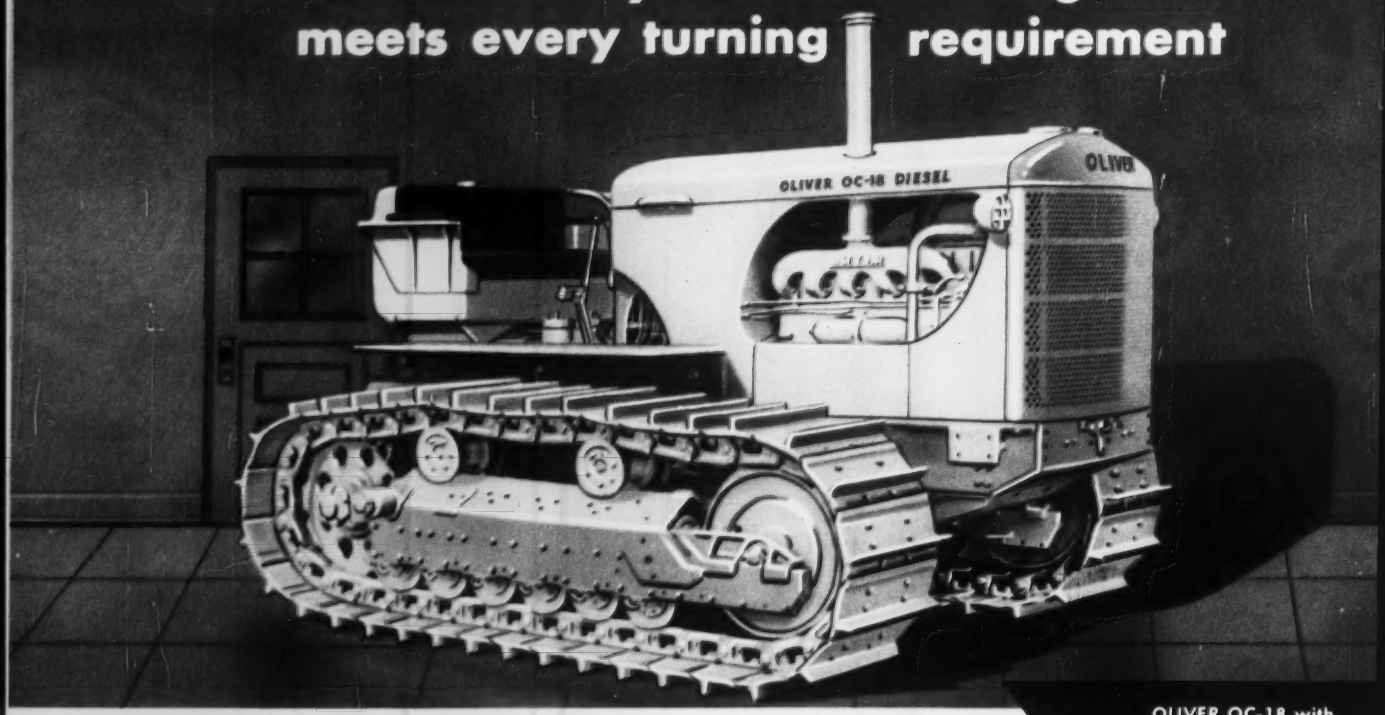

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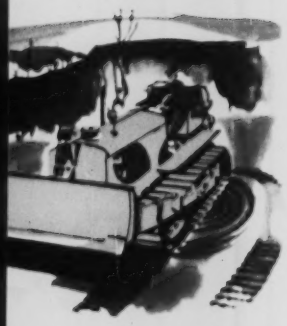
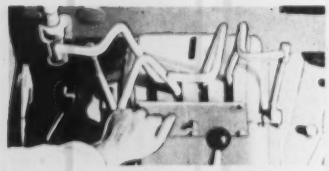


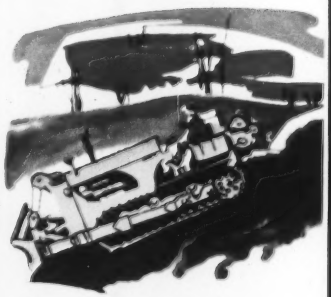
Spot turns are made by depressing outside levers. The control automatically declutches the power to the track and delivers it to the opposite track, which remains at normal speed. You can spin on a dime or maneuver in the tightest spots. The stopped track is locked and cannot drift as with ordinary clutch steering.

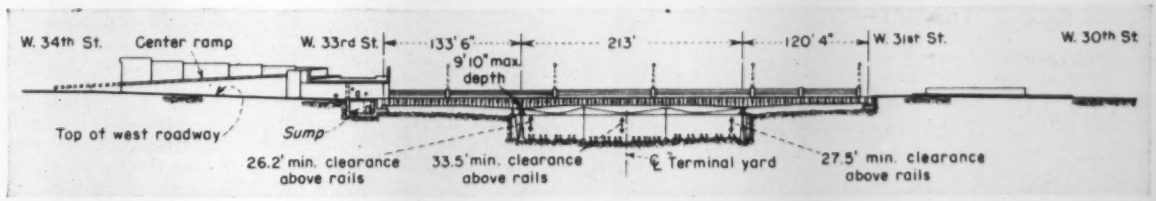
Change of pace without shifting. Depress both inside levers and you engage planetary reduction drive to decrease speed 38% and increase drawbar pull up to 60%. You can vary your speed and power, *instantly*, to meet all load conditions—without touching the clutch. Between direct and reduction drive, you have a total of 8 speeds forward, 4 reverse.



Gradual turns are made with inside levers. When you slow one track, the opposite track maintains normal speed, enabling you to make wide or tight turns with power on both tracks. This means extra stability on grades, no loss of pulling power on turns... and no cross-steering downhill.

Stopping and holding the tractor may be done by pulling both outside levers or by depressing the foot air brake control. By use of this foot brake both hands are free to actuate clutch, shift gears and operate equipment controls... makes it safer and easier to control the tractor under all conditions.





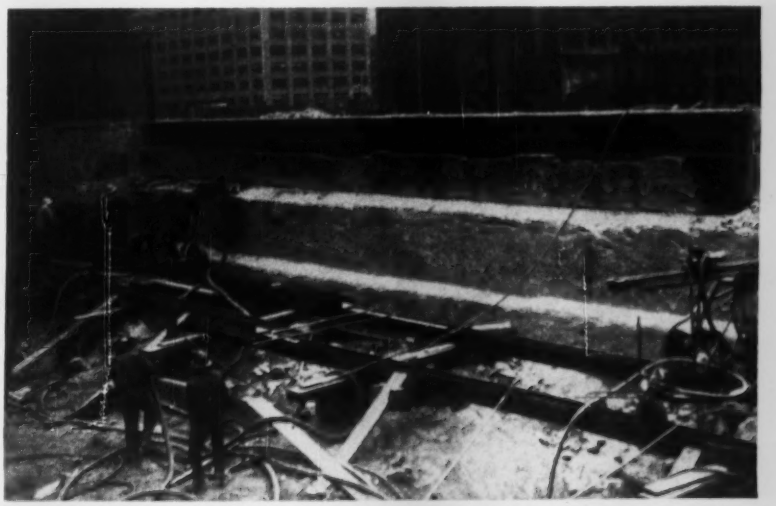
BRIDGE ON MANHATTAN APPROACH is a three span structure in order to provide for expansion of Pennsylvania Railroad yards under its side-spans.

. . . Lincoln Tunnel

where a neighboring building houses a specialty printing firm, the contractor gave building occupants a five-minute warning so that they could shut off delicate machinery before the blast.

And at the point where the new approach road reaches the edge of the Pennsylvania Railroad's 14-track yard leading to its under-river tunnels, no blasting is permitted at all. The yard itself is in a deep open cut, about 70 ft below street surface, and the cut for the approach road is about 30 ft higher. No rock must fall on these operating tracks, and no interference can be tolerated to the catenary wires that power the railroad's electric locomotives.

To take out this section, therefore, the contractor is using three wagon drills with their drills operating horizontally, to line-drill the rock in the last 35 ft approaching the yard. Then, from scaffolding built up from the yard bottom, workmen chip the rock with air hammers, pushing it away from the yard itself.



EXCAVATION in Manhattan includes this delicate operation. On the other side of the wall being drilled is a 70-ft drop to railroad yards. Wall is line drilled, then broken away with air hammers by workmen on scaffolding on opposite side.

• **Big Bridge**—The structure that will cross these yards—as well as areas at either side for yard expansion will be a major cantilever bridge in itself, worthy of separate note if it were not merely a part of this overall approach project. The bridge will have an overall length of 467 ft, with a center span of 213 ft and side spans of 121 and 133 ft. The structure will be built as a bridge for the length of the two side spans—even though, at present, the bottom of the girders will be, in fact, only a few feet above the excavation—to provide for possible future expansion, by excavation, of the railroad yards.

Because of the catenary wires over the yards, and the necessity of maintaining uninterrupted train service, the center span will be erected as a cantilever.

Several of the other bridges along the roadway are sizeable structures, but perhaps the most interesting work was done on an existing bridge at 39th St., where one girder (the southerly one) was lengthened by 20 ft, to permit straightening of the road under it. This was accomplished by riveting a new, 2-ft-deep girder atop the old 8-ft girder, for the full length, then riveting on the extension at the end, and installing 10-ft deep braces at each panel point to provide added strength. Other bridges, while heavy, are simple trusses.

Sidewalls of most of the depressed roadway will be formed of cast-in-place, reinforced concrete. But the last 500 ft of the roadway, near the plaza itself, has sidewalls formed of cast in place buttresses that support 4-ft by 32-ft precast, prestressed panels, which are described in an accompanying article.

The ventilation house on the Manhattan side, straddling 38th St., is the only part of the work under contract to a firm other than Gull. It is being built by Colmar Construction Co. of New York. Now 80% completed, it will not be finished until the end of 1956, because final construction must be delayed until necessary machinery is installed.

• **Jersey side**—On the New Jersey side of the river, three separate contractors are at work on various phases of the approach work.

Working out from the tunnel exits, the Grow Construction Co. holds a $1.9 million contract for construction of a tunnel portal and work between the tunnel portals and the existing toll booths. The contract includes knocking down a huge stone wall that formed the east wall of the old plaza, moving a large drainage sump that was located in that old wall a distance of 96 ft to the east to a new wall, and paving the added area to provide access to the new tunnel.

Cayuga Construction Co., New York, is at work on a $1.7 million contract that includes installation of five additional toll lanes, widening of two of the bridges that form the beginning of the Helix, and demolition of the massive old administration building to make room for the new roadway.

James Mitchell, Jersey City contractor, has completed a $1.6 million administration building to house tunnel operating personnel. The new structure, with sandstone and stainless steel facing, is flat-roofed to accommodate the Port Authority's helicopters, and contains locker and dressing rooms for tunnel police, a cafeteria, vaults for storing cash receipts, a complete medical department and the usual offices.

From a point at the beginning of

. . . Lincoln Tunnel—from two to three

the Helix, Grow takes over again, with two separate contracts covering the widening of the Helix roadway to the top of the Palisades (known locally as King's Bluff).

• **Tough Helix**—The Helix itself, extending over a total of 1,800 lin ft, is a complex structure. It starts at the toll plaza as a concrete roadway on earth fill, changes to a heavy steel truss bridge in a skewed crossing over Hudson Boulevard, then changes again to a curving trestle supported on circular piers, then to three large bridge trusses, roughly 156 ft in length, then to a trestle supported on high concrete legs (some of them 80 ft long) until it meets the rock of the Palisades. At the top of the hill, the roadway is carried on heavy trusses as it crosses over Hudson Boulevard again.

Port Authority engineers decided that the present six 12-ft concrete roadways carried on the Helix should be increased by only one lane—a fourth lane on the outer edge of the upbound roadway—which would permit heavy trucks and buses to get out of the traffic stream as they grind up the long incline. Existing toll booths on left and right hand sides of the present 13 lanes will be replaced by 18 booths on the left side. Of these 18 lanes, the seven center lanes will be reversible for eastbound and westbound traffic. These installations are expected to improve traffic flow.

To add an extra lane to the Helix, under conditions of heavy traffic, and without materially affecting the structure called for considerable ingenuity on the part of engineer and contractor.

First problem was the 75-ft wide bridge over Hudson Boulevard at the bottom of the incline. For architectural reasons, PNYA wanted to preserve the appearance of the curved bottom flange of the heavy steel beams that support the roadway, but didn't want to go to the expense of fabricating a new girder in the same shape. Answer: Extend the abutments, lift the old end girder to a new position on the extended abutment, replace it with a standard, squared girder that will be masked from casual view by the older one on the outside.

Next problem started immediately at the end of this bridge, where the Helix is supported on a series of three-column concrete bents supported on circular piers on rock.

Because of very poor foundation conditions (the area is an ancient bay filled with silt and mud), it was decided to make use of the existing footings, instead of drilling new caissons 100 ft or more to rock.

Solution, then, was to cast a triangular piece onto the outside end of the footing, and on this added base, to support a pipe-column at about a 30-deg angle, to support the added roadway lane. A similar column was installed on the inside of the curve to counteract thrust. The pipe columns vary in wall thickness from ½ to ¾ in., and are about 1 ft in diameter.

On the truss sections, the addition was made by cantilevering added steel supports, and on the higher portion, where the Helix goes upward in a straight line, an additional row of pipe columns was added, anchored to firm rock. In erecting scaffolding for paving this section, the contractor made use of reinforcing bars incorporated in the original structure. When an existing 2-ft-wide service walkway was cut away, 1¼-in. dia. reinforcing bars that had projected into it were left exposed. From these, and from a line of girders connecting the new outside columns, the contractor suspended all scaffolding and formwork, eliminating the need for scaffolding built up from the ground as much as 80 ft below.

In North Bergen a long, six lane steel viaduct which carries the west end of the tunnel approach roadway is being widened to eight lanes to accommodate tunnel traffic and a large volume of traffic that uses this section of the approach system between the towns atop the Palisades and the highways to the west. A two-lane structure will be constructed along the south side of the existing viaduct and the existing center wall will be moved one lane southward to provide four lanes in each direction. Cayuga Construction Co. is doing this work at a cost of $1.5 million.

• **Tunnel moves ahead**—Meanwhile, construction of the third tube itself is moving at a fast clip. As of the end of December, the joint venture of Mason-Walsh-MacLean handling this part of the construction, had reached the Manhattan shore bulkhead line, pushing the underwater section from the New Jersey side at the rate of 14 to 16 rings per day.

Joseph Gavin is resident engineer for the Port Authority in charge of the approach work on the Manhattan side, with C. M. Shultis as assistant. Harry Druding is resident engineer on the New Jersey side, with Frederick Fontanella as assistant in charge of approach work.

Precast Concrete for Approaches

C. Lowy
The Port of New York Authority, and
S. Pinter
Consulting Engineer, Precrete, Inc.

In the planning stage, it became obvious that construction sites would be extremely crowded, so that any work performed away from the site would result in savings of both time and money.

Prestressed and precast concrete, based on the Authority's experience in the construction of the Hoboken Piers and of a marginal wharf at the Hudson River, appeared to be a logical solution.

The following applications of the prestressing technique were incorporated in the design of the tunnel approaches:—Precast panels in retaining walls up to 50 ft high bordering cuts in the Manhattan approach; decks of long-span viaducts in New Jersey and Manhattan made of factory-built prestressed panels.

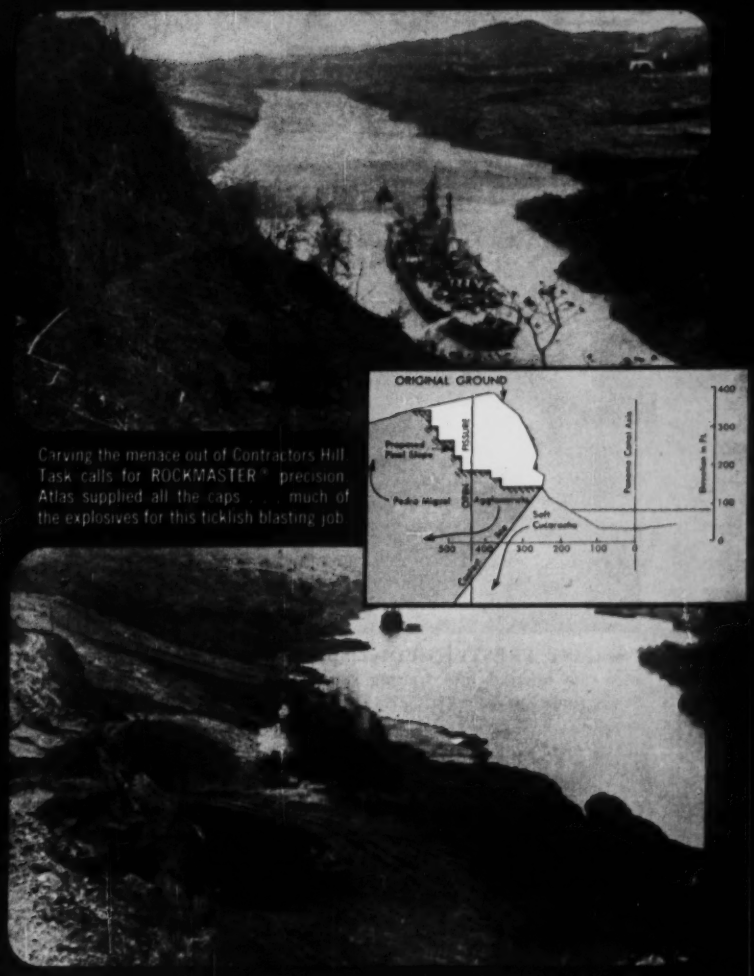
• **Buttress type**—The design of retaining walls with prestressed panels, as adopted for the Manhattan approach takes its cue from the conventional buttress type. Buttresses were constructed 32 ft on centers by conventional methods, founded on rock. At both sides of each buttress, recesses were provided, into which the prestressed panels were lowered. A cast-in-place grade beam took the vertical load produced by the weight of the panels. Membrane waterproofing was applied to rear faces of the panels and protected by fiberboard.

The individual panels are 4 ft. high, 18 and 12 in. wide, and are provided with interlocks. The surfaces exposed to view show vertical striations. The design provided enough prestressing to sustain lateral pressure corresponding to the height of the fill, a surcharge of 250 psf at the top of the fill, and an estimated head of water which conceivably may build up. Variation in the stress capacity of the individual panels was accomplished by varying the number of prestressing strands. All panels contained openings in the middle, in order to reduce the weight and the amount of prestressing needed.

While estimated low cost and efficiency in the field were major factors in the decision to use these panels, the pleasing appearance yielded an additional bonus.

• **Fabrication**—Fabrication took place in the Astoria, Long Island, plant of Precrete, Inc., subcontractors to Gull Construction Co. Steel forms, consisting of base frame and plates, and

Engineered Blasting keeps 'Contractors Hill' from toppling into Panama Canal



Carving the menace out of Contractors Hill. Task calls for ROCKMASTER® precision. Atlas supplied all the caps . . . much of the explosives for this ticklish blasting job.

Since 1938, a menacing fissure has been slowly widening in Contractors Hill, 330 feet above the Panama Canal. Last year, Tecon Corp., Dallas, Texas, undertook the challenging job of carving 4,500,000 tons of treacherous, highly fractured rock from the face. The problem was to blast . . . but without toppling the mountain, and with little except dust falling into the Canal itself!

Using ROCKMASTER® millisecond delay electric blasting caps, the contractor carefully selects timing patterns. A bench is made by blasting vertical holes up to within 20 feet of the face. Horizontal hole blasting breaks the remaining 20 feet in place.

Vertical hole blasts are bottom-initiated—ROCKMASTER caps being chosen to move the base of the face out first, and direct throw away from the Canal. Triple rows of horizontal holes are timed to fire: top, bottom, middle. This sequence creates a fracture line in the last 20 feet, decreases back-break, and assures breakage *in place*. Thus, broken rock can't pitch forward into the Canal.

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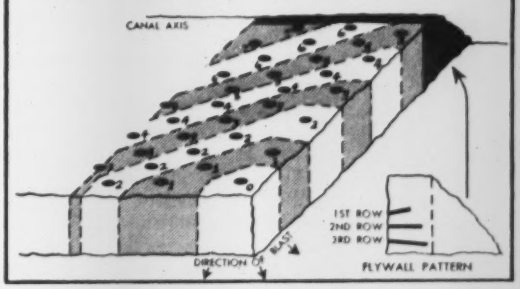
BLAST PATTERNS

TYPICAL PATTERN USING ROCKMASTER® MILLISECOND DELAY ELECTRIC BLASTING CAPS



ATLAS

ATLAS EXPLOSIVES

"Everything for Blasting"

ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE

Offices in Principal Cities

PRECAST, PRESTRESSED wall panels, which incorporate striated facing for appearance, are lowered into waiting slots in buttresses to form the walls of part of the below-grade approach roads.

. . . Precast concrete for tunnel approaches

provided with set screws for desired adjustment, solved the tolerance problem. The architectural finish was obtained by placing, at the bottom of the form, striated plywood base lining, treated with plastic form coating and light form oil. Shaping of the required internal voids in the concrete was done by means of 10-in fiber tubes, held rigidly in place by framing into the side forms.

A total of 237 panels was cast in face-down position, and steam cured. Prestressing strands were cut at the required concrete strength of 3,500 psi. Slabs were shipped lying flat and tilted up for erection. A choker sling was belted around the piece at midspan, and tag lines were attached to lifting hoops, provided at the upper face. After the crane lowered the panel into the pier slots on pads of expansion joint filler, the sling was removed by pulling up slightly on the lifting hoops, which were burned off after final setting.

Tests on three slabs using a hydraulic jack at midspan were performed to check the engineer's prediction as to cracking load and ultimate load. In every instance, the cracking and failure loads were at least those predicted, with substantially better results for the panels with the heaviest prestress. Total absence of shear cracks in the vicinity of the supports was of special interest, as was the disappearance of the bending cracks, after removal of the cracking load. Slabs failed under a bending movement averaging 3½ times design moment.

• **Deck slabs**—Two steel structures, one on the Manhattan and one on the New Jersey approach were decked with precast slabs. In the case of the Manhattan structure, the conventional method of placing concrete, including forming, pouring, and stripping, would be costly and hazardous over an electrified railroad yard. In the case of the New Jersey structure, maintenance of heavy traffic constituted a major problem and forced the adoption of a design which would reduce the time of traffic restriction to a minimum.

The deck units adopted for the Manhattan approach are rectangular slabs, 5½ in. thick, of 8-ft span and 22 ft wide. The bridge has a floorbeam system made up of wide-flange sections.

Slabs are set on swan-neck shape, 16-ga metal grout dams, which are welded to the beam flanges. Nonshrink grout is placed between intermittent shims under the slabs and retained by the grout dam. The slabs are fastened to the floorbeams by studs and steel clamps, forming a holddown. Continuity of the slabs over the beam supports is effected by welding the mild steel top reinforcement across the supports. Grout is vibrated in the space between the slabs. Topping of 2-in. sheet asphalt then is laid over the units to become the wearing surface.

The design is based on Westergaard's investigation of concentrated-load effects on elastic slabs. In order to obtain proper distribution of wheel pressures and to avoid "free edges", the slabs were purposely made 22 ft wide, thus extending over the width of two lanes.

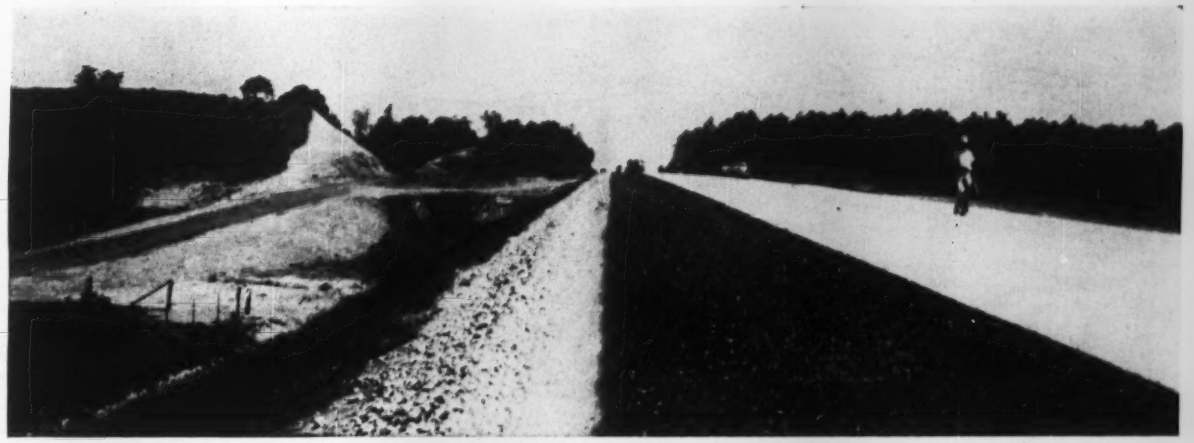
Primary stresses in the slab, due to dead load and wheel concentrations, are taken by 1,300,000 lb of lateral compression, induced by ⅜-in. dia 7-wire strands, 2 in. c-c. Mild-steel reinforcing is used for crack prevention in a direction normal to that of the prestress strands and in the slab top. Use of prestressing made possible a reduction of slab thickness well below that which would be used in conventional design.

• **Tests**—In order to study the behavior of these prestressed slabs and of the joints under continuous pounding by heavy traffic, the Port Authority built a four-panel test structure within the area of New York International Airport.

Gasoline tank trucks plying from a tank farm to fueling points were routed over this test panel. More than 10,000 heavy axles were counted as passing over the test structure at a speed estimated at better than 35 mph. Upon completion of the first part of this test, pig iron was piled on one of the slabs in such a manner that the bearing area of the pig iron comprised roughly 60% of the span between the edges of the flanges.

When the design load equivalent of 42 tons was placed, no downward deflection was observed. This observation was in agreement with the engineer's prediction that the upward bow due to the prestressing would merely be flattened out by the application of the live load. Gradually the test load was increased to 200 tons, i.e. approximately five times the design load equivalent, and slab deflection was observed to be no more than ⅛ in.

Since, at that time, yielding of the supporting crib structure became noticeable, no risks were taken trying to observe cracks at the underside of the slab. However, when the test was discontinued, and the iron taken off the slab, there was no evidence of any cracks. Upon completion of the loading test, the asphalt topping was removed over the joints, and the grout placed between the slabs was chipped out. Inspection revealed that there were no apparent cracks in the grout, nor had any of the welds joining reinforcing bars been ruptured.



THIS STRETCH of 9-foot wide Penetration Macadam shoulder will be given a Double Surface Treatment.

Bitumuls 3" Penetration Macadam for Heavy Duty Shoulders on West Virginia Turnpike

Bitumuls and a Specially-Built Compactor Team Up to Provide Maximum Stability

On a heavily traveled 30-mile section of the West Virginia Turnpike, safety and utility demanded the addition of a nine-foot shoulder. To provide a pavement-extension of maximum stability, Penetration Macadam with emulsified asphalt was specified.

Special Compactor

A special "articulated" compactor, designed for this particular job, was made up in two-foot sections to provide adequate flexibility for full-width compaction without rideover. This compactor gives maximum void filling, but Bitumuls easily penetrates down through the stone forming thin asphalt films that allow fractional contact of the graded stone thus assuring maximum stability.

Methods of Construction

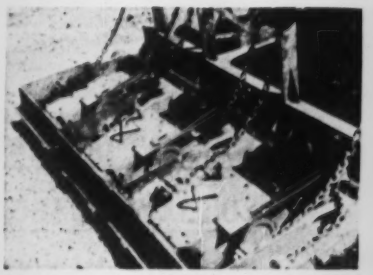
Base stone 2½" to 1" in size was placed at 210 lbs per sq. yd., rolled lightly, then choked with ½" to No. 8 chips, using the special compactor.

Bitumuls RS-1 was then applied at the rate of 1.25 gals/sq. yd., followed by a cover of ½" to No. 8 stone chips at 40 to 50 lbs per sq. yd. This cover aggregate was rolled with an 8-ton tandem, and a second application of Bitumuls RS-1 applied at 0.8 gals per sq. yd. Cover aggregate was again spread at 18 lbs per sq. yd.

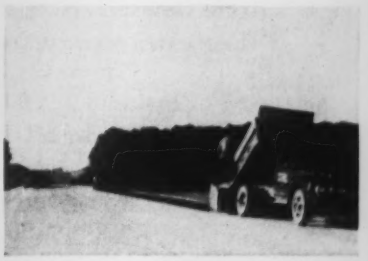
The surface was then given a Seal Coat of 0.5 gals per sq. yd. of Bitumuls RS-2 followed by imported limestone chips at 15 lbs per sq. yd. The final step in sealing the shoulders was a second Seal Coat of 0.25 gals per sq. yd. of Bitumuls RS-2, with the final cover of ⅜" to No. 10 chips at 10 lbs per sq. yd. This Seal Coat was then given a final rolling.

Bitumuls Field Engineers from our office nearest you will be happy to supply specifications on this or other types of paving.

Illustrated booklets on *all* types of Bitumuls construction and maintenance work are also available.



CLOSE-UP of the specially-designed "articulated" compactor showing the individual 2-foot sections.



SURFACING AND SEALING operations, Distributor applying Bitumuls (center) is followed closely by cover-aggregate truck. An 8-ton tandem was used to roll the cover aggregate.

AMERICAN Bitumuls & Asphalt COMPANY

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E. Providence 14, R. I. Perth Amboy, N. J. Baltimore 3, Md. Mobile, Ala. Cincinnati 38, Ohio Columbus 15, Ohio Tucson, Ariz. Seattle, Wash. Baton Rouge 2, La. St. Louis 17, Mo. Inglewood, Calif. Oakland 1, Calif. Portland 7, Ore. Washington 5, D. C. San Juan 23, P. R.

F-100 8-ft. Pickup—GVW 5,000 lbs.

T-800—GVW 42,000 lbs.; GCW 65,000 lbs.

Ford saves you money with

YOU SAVE ON PARTS REPLACEMENTS—*add miles to engine life!*

YOU SAVE ON SHOP LABOR—*cut maintenance to the bone!*

YOU SAVE ON YOUR ORIGINAL INVESTMENT—*get more work done per truck!*

Ford Trucks for '56 save you money right from the start. And, they keep on saving with their extra-sturdy, long-life engine design.

For instance . . . Ford Engineers have now introduced into all heavy-duty engines the greatest valve advancements ever. As an example, see the exhaust valve in diagram on right page. The valve stem is hollow and partially filled with powdered sodium. When the sodium gets hot, it *turns into a liquid.* As it moves up and down, it carries heat away from valve head—*allows it to operate up to 225° cooler!* Result: a cleaner-running, more burn-free, longer-lived valve face.

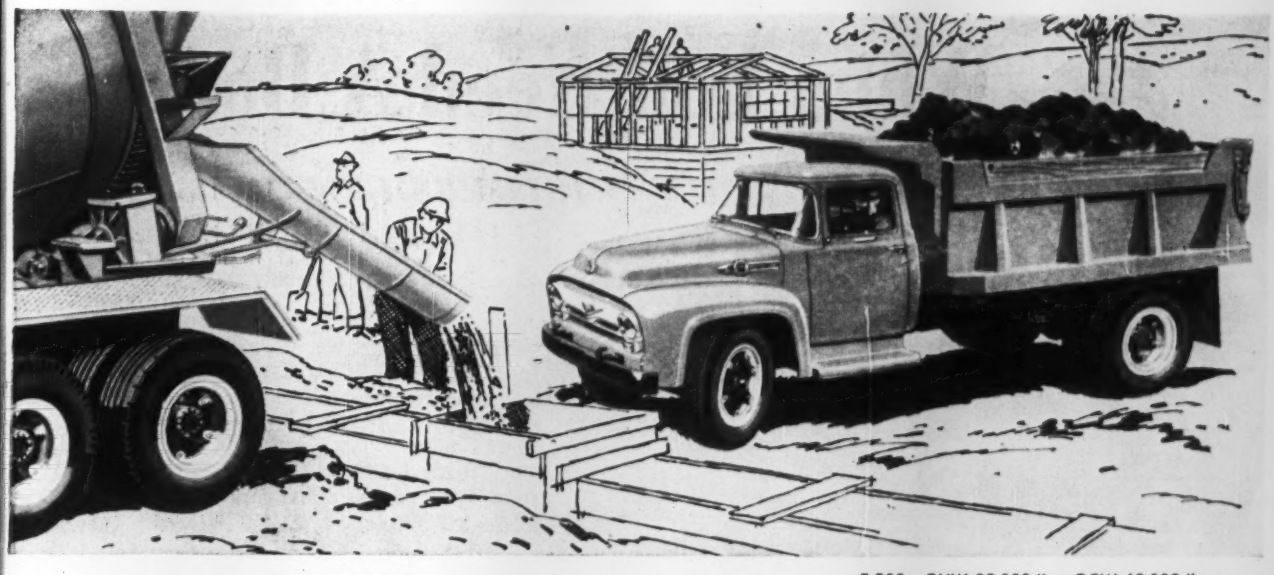
Ford's long-lasting engine design pays off for you in every way. You save money on parts replacements such as piston rings and bearings. You save on shop labor—extend time between preventive maintenance jobs like valve adjustments, valve grindings, compression tests, ring jobs and the like.

And you can save on driver costs if you can keep trucks out of the shop and on the road. Yes, you save in every way when you get more work done per truck!

There's a Ford Truck for every trucking job. Before you buy your next truck, Test Drive a Ford Economy Truck.

FORD TRUCKS LAST LONGER

Certified by Independent Insurance actuaries for the ninth consecutive year! Studies of over 10,068,600 current license registrations show that Ford Trucks last up to 9.9% longer than any of the other 4 leading truck makes!



F-900—GVW 29,000 lbs.; GCW 60,000 lbs.

new long-life engine design

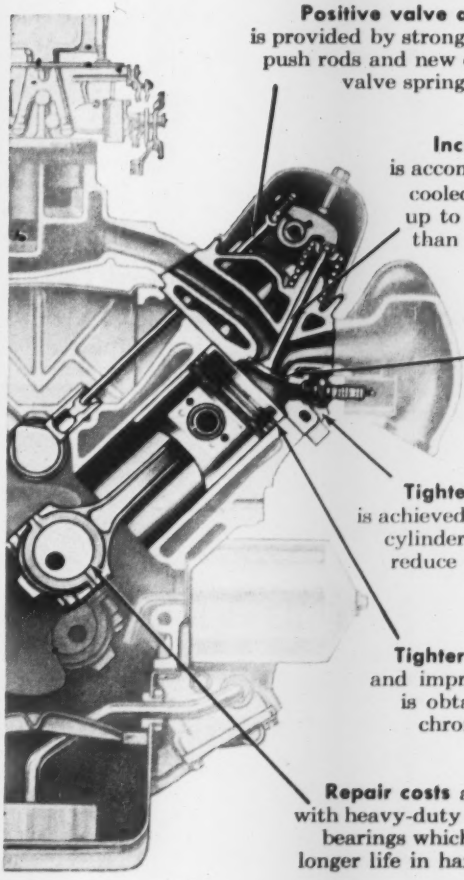
Hauls up to 3000 lbs. more than other 6-wheelers—New Ford T-800

● New power and hauling capacity of the Ford Tandem BIG JOB cuts hauling time on every run—makes giant cargos seem lightweight. You have a choice of two gas-saving Short Stroke engines. Either the 190-h.p. *Torque King* Y-8 or, the 200-h.p. *Torque King* Special Y-8.

You have new engine advancements for longer life (some explained and illustrated at the right).

New high-capacity tubeless tires, heavy-duty 5-speed transmission and Power Steering are standard equipment, at no extra cost. Two 3-speed auxiliary transmissions and full-air brakes are available at low extra cost.

New *Driverized* Cabs for driving comfort and convenience have *Lifeguard* Design safety features found in no other truck. Lifeguard steering wheel helps protect driver from steering column; Lifeguard door latches help keep doors from jarring open in case of accident.



Positive valve action is provided by stronger, tubular push rods and new equal-coil valve springs.

Increased valve life is accomplished with sodium-cooled exhaust valves—up to 225° cooler-running than solid-stem valves.

Longer valve and seat life are the result of solid tungsten-cobalt alloy facings and exhaust valve seat inserts.

Tighter valve closing is achieved with stress-relieved cylinder heads that help reduce valve distortion.

Tighter compression seal and improved ring durability is obtained with thicker chrome-plated rings.

Repair costs are lower with heavy-duty copper-lead bearings which provide longer life in hard service.

When You Need A Bond

for your business abroad...

Your best choice is the American Foreign Insurance Association. Then you are assured . . .

- ✓ the capacity of AFIA's 24 capital stock insurance member companies including the largest and strongest in the U.S.A.
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FAST NUT RUNNING to accurate tension tolerance speeds structural bolting.

Impact Wrench Has Controlled Torque

Structural steel setters can run nuts at top speed without fear of overdriving or stripping threads with a new controlled torque impact wrench. Introduced by Ingersoll Rand, the pneumatic hand tool shuts itself off instantly as soon as the nut it is driving reaches a set tightness.

The device is similar to a conventional pneumatic impact wrench, but has an important addition. Between the driving mechanism and the socket head is an adjustable torsion bar—the heart of the torque sensing mechanism. The torsion bar has little effect on the operation of the unit as long as there is no resistance to tightening. But as soon as the nut clinches down, the torsion bar is twisted with each blow of the impact motor hammer, and serves to amplify the rebound of the impacting hammer within the tool. As the bolt tightens, rebound increases until the hammer bounces hard enough to hit a mechanical linkage that throws the air valve to the off position. All this rebounding is internal, and does not effect the feel of the tool. The wrench has little recoil or backlash. During a demonstration, setting $\frac{7}{8}$-in. high tension bolts, the operator had no difficulty handling the heavier impact wrench with one hand after it was set on the nut.

Two models of the Torque Control Impactool are in production, one for heavy and one for light bolting operations. The big 31½ lb 5340T will run ¾ and ⅞ in. high-strength bolts to a maximum torque of 550 ft lb, and was designed specifically for construction jobs. The smaller 5040T wrench weighs only 6¼ lb and will put up to 90 ft lb torque on a ⅝ in bolt.

Once set to a torque limit, the tools do a consistent job. Driving eight nuts on high strength ¾ in. bolts, in a demonstration, the torque readings ranged between 350 and 380 ft lbs—a variation from average less than 5%. Actual machine running time on each bolt varied from about 6 sec to 2 sec, illustrating how the torque, not the time, controls the shut-off mechanism.

TOOL can be supported with one hand.

Resetting the tools to a different torque is a simple operation requiring less than a minute. But it requires a special jig so that it is a toolroom operation. Ingersoll-Rand claims that the setting mechanisms could have been designed so the operator could change the torque, but it was deemed wiser to make the job just complicated and semi-permanent enough to eliminate accidental changes, tampering, and misjudgement. If the tool is set in the tool crib, it will set all bolts to the same tension until it is brought back for a change that can be recorded.

Insulated Curtain Walls Are Assembled in Field

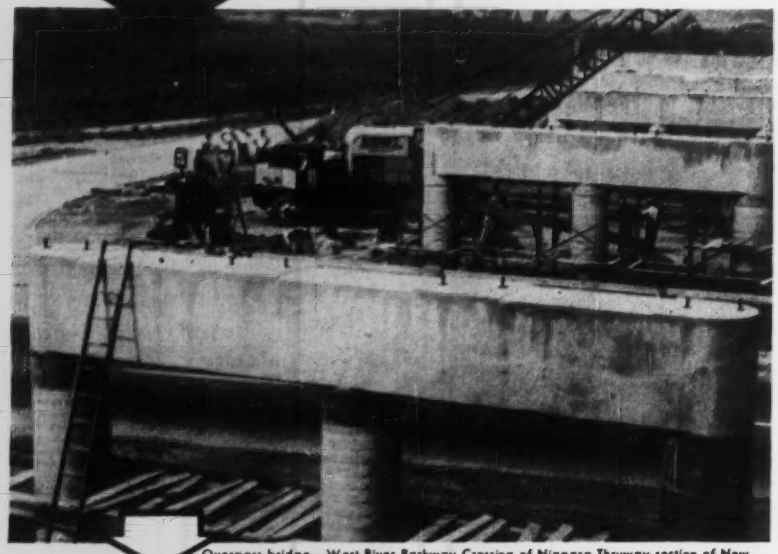
A wall panel system that is assembled in the field has been added to the Fenestra Line of prefabricated building components. The chief advantage of the field assembled curtain wall lies in reduction of shipping costs and packaging requirements. The curtain wall components—light gage metal skin, insulation, and hanging hardware—are shipped separately to the building site where wall panels are erected and fabricated simultaneously.

The panel system produces a wall with deep vertical flutes that is only 3¼ in. thick including insulation. The exterior panels, produced in lengths up to 31 ft, are fabricated from 18 gage galvanized steel, or 16 gage aluminum with either mill or leatherette finish.

After steelwork or wood structure is completed, the fabrication of the wall panels adds little time to the job of closing the building, the manufacturer claims. The wall assembly process begins with welding or bolting vertical zee bars to the structural members on 24 in. centers. Horizontal channels to support the exterior panels attach to the zee bars with sheet metal saddle clips and drive rivets. For thermal insulation, batts of fiberglass are clinched between zee bars on the building side of the horizontal-support channels. The exterior wall panel is attache dto the horizontal supports by drive rivets and edges of adjoining panels are vit-clinched, completing the wall assembly.

Panels are light enough to be handled by two men. The entire wall assembly is so light, due to its cellular

LOW-COST
SONOTUBES®
form 3-foot diameter concrete piers for overpass bridges!



Overpass bridge—West River Parkway Crossing of Niagara Thruway section of New York State Thruway, near Grand Island, N. Y. Hendrick Construction Co., contractors.

SONOTUBE®
FIBRE FORMS
for round columns of concrete

Three foot diameter columns do the work of many more smaller sizes in the building of five overpass bridges on the New York State Thruway. Forms for caps tie-in easily with the SONOTUBE form for supporting piers.

Low-cost SONOTUBES formed these columns faster and more economically because the SONOTUBES required minimum bracing and handled easier on the job.

SONOTUBES are approved by architects and engineers and are widely used by contractors everywhere in the construction of piers, piles, underpinning and other structural uses. They save time, labor and money!

Order SONOTUBE Fibre Forms for your next job available in sizes from 2" to 36" I.D up to 50' long. Can be supplied in specified lengths or sawed to size on the job. For finished columns, order Sonoco's patented "A-Coated" SONOTUBES; wax-coated also available.

For complete technical information and prices . . write

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construction, that dead weight load on the building structure is minimal. Detroit Steel Products Co., Detroit, Mich.

Electrically-Powered Windows Have Compact Actuators

Aluminum awning windows open and shut by remote control using a new sill-enclosed electrical drive that requires no extra space. Designed for both residential and commercial use, the device is built into the window frame so there are no exposed gears or levers. The unit opens and closes banks of awning windows with positive power in both directions.

The electric windows have a push-button control on the window frame, or can be wired into a master control system for remote operation. The drive mechanism is equipped with limit switches to prevent overrunning, and automatic shut-off devices that cut power in case the units overheat. A manual control for each window provides emergency operation in case of power failure. The electrical drive is disengaged by means of an automatic clutch when power is turned off.

The remote control feature of the window makes it practical for institutional use where large numbers of windows must be opened or closed frequently due to weather changes. Also, clerestory banks difficult to reach can be used for ventilation.

The windows offer a choice of two switching systems. For straight 115 v operation, a toggle switch for each window controls opening and closing. For installations of more than one window, a 24 v remote control system is recommended, making it possible to operate all windows from a single switch or groups of five windows individually from a switch panel.

The average three-vent awning window, 3 x 4½ ft, costs about $125 complete with motor without switching system. Costs will vary somewhat with different installations depending on the complexity of circuitry. Gate City Sash and Door Co. 15 S. W. Third Ave., Fort Lauderdale, Fla.

Pressure Contact Adhesive Adapted For Spray Guns

A pressure contact adhesive for spray application has been added to General Electric's line of bonding agents for the decorative laminate field. Identified as "Type AA" the adhesive is applied by any type of spray equipment to surfaces of wood, metal or composition materials. The material was developed specifically for

bonding GE's Textolite laminated surfacing.

The new sprayable adhesive is part of a series of pressure contact bonding agents that do not require presses, clamps or weights to secure a tight, waterproof bond. Other adhesives in the series are Type A for brush and trowel application, and Type B for trowel application only. The three adhesives are distributed through General Electric's outlets for Textolite plastics surfacing materials.

100-hp Diesel Powers Cat 2½-cu yd Tractor-Shovel

Catapillar has introduced a bigger shovel in its Traxcavator line. The 2½ cu yd model has many features found in the smaller models of integral tractor-shovels that preceded it.

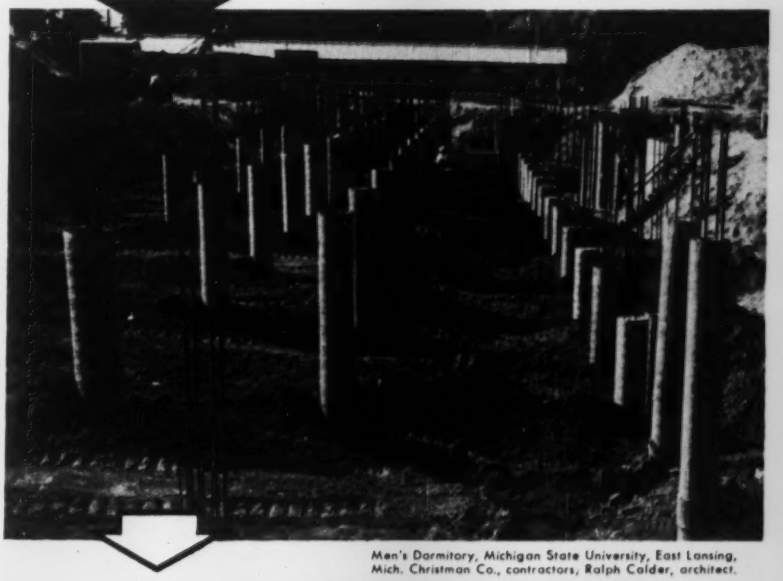
The bucket has a 40 deg tip back powered by a differential lever on each lift arm that helps retain heaped loads of loose materials. No declutching is necessary in a loading pass, since the bucket drives into the stockpile and tips back in one cycle. Also, the bucket can be alternately tipped and leveled while pushing to help work into the material. This action will pick up a heaped load at ground line, and since horizontal tractor push and upward hydraulic lift can be exerted simultaneously, better break-out action results.

The Model 877 has an automatic kickout on the lift valve, and an automatic bucket positioner on the bucket tip valve. The positioner is adjustable to any digging angle. The kickouts shorten cycle time, since the operator's hands are free to operate other controls after presetting the

(*Continued on page 62*)

TRAXCAVATOR lifts full heaped loads.

SONOTUBE®-formed concrete columns save time, money and labor on this dormitory!



Men's Dormitory, Michigan State University, East Lansing, Mich. Christman Co., contractors, Ralph Calder, architect.

SONOTUBE®

FIBRE FORMS

for round columns of concrete

Low-cost SONOTUBES formed the round concrete columns for this Michigan State University building as they have for great numbers of similar type institutional structures all over the country.

SONOTUBE Fibre Forms are used to form piers, piling, underpinning and other structural elements in many types of construction.

Contractors and engineers know that SONOTUBE Fibre Forms require minimum bracing, handle easily and can be sawed to specific requirements on the job. Contractors' cost records are proving over and over again that SONOTUBES save time, labor and money!

Order SONOTUBE Fibre Forms for your next job! Available in sizes from 2″ to 36″ I.D up to 50′ long.

Order Sonoco's patented "A-Coated" SONOTUBES for finished columns; wax-coated also available.

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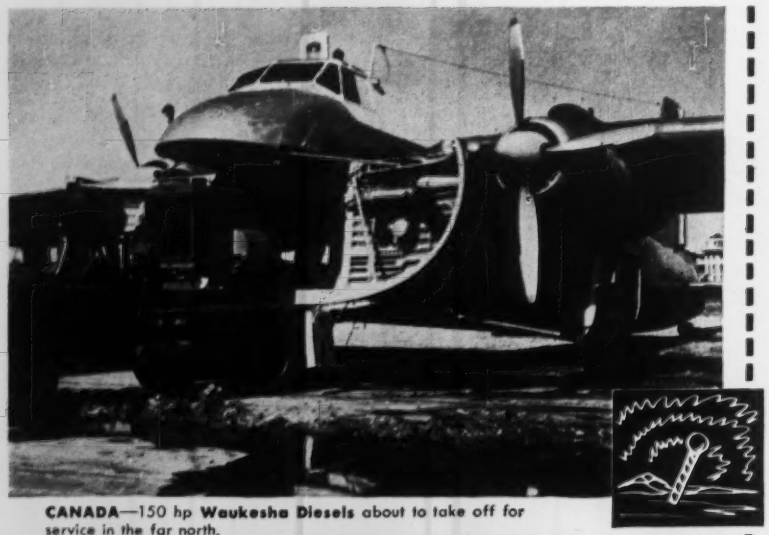
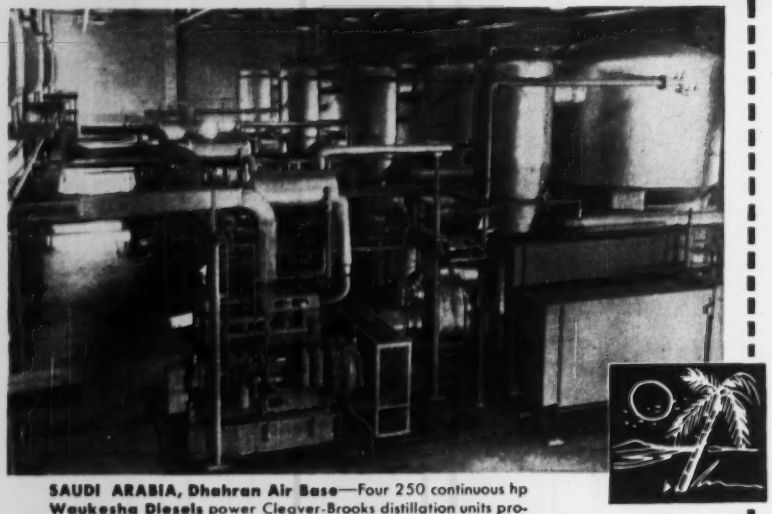
from the Canadian Arctic----
to Saudi Arabia----------



CANADA—150 hp **Waukesha Diesels** about to take off for service in the far north.



SAUDI ARABIA, Dhahran Air Base—Four 250 continuous hp **Waukesha Diesels** power Cleaver-Brooks distillation units producing 200,000 gal. of potable water daily.

50th Anniversary Waukesha Motor Company 1906-1956

Power packed, fast, smooth—with built-in stamina for service in any country or climate—Normal or Turbo-diesels, Gas, or Gasoline Engines—up to 1135 hp. Waukesha Motor Company, Waukesha, Wis., New York, Tulsa, Los Angeles. Send for Bulletin 1079.

WAUKESHA *Diesels*

290

. . . New Products

bucket control.

The overall dimensions of the new Traxcavator are: length 17 ft, width 8 ft, height 7 ft 3 in and ground clearance 1 ft 4½ in. The unit is powered with a 100-hp diesel with a gasoline starting engine.

LOF Enters Insulation Field With Low Density Barrier

LOF Glass Fibers Co. will enter the home insulating field this year with a line of low density foil and fiber insulating material. The insulation has only one facing, since the fine glass used fibers are so light that the foil itself is strong enough to provide support. The insulation is manufactured in continuous strips, which are rolled and bagged for easy handling. The foil extends beyond the fiber mat on each side, so that the insulation is simply stapled or nailed to framing members. One man has little difficulty in installing the barrier.

Three thicknesses, standard, medium, and full-thick, provide differing degrees of insulation value based on maximum efficiency of space utilization between the interior and exterior walls of various standard wood frame constructions. The insulation is so designed that it leaves an air space between the foil and the interior wall to ensure full reflective performance of the foil surface. Standard widths of the material accommodate framing spacings of 16, 20, and 24 in.

The product is one of the lightest of home insulating materials, running a mere 1 to 2 oz per ft, depending on width and thickness. The low density and low specific heat of the material minimizes the heating or cooling lag, which helps reduce start-up runs in regulated air conditioning and heating systems. LOF Glass Fibers Co., Toledo, Ohio.

New Light Scaffolding Carries 40 Times Its Weight

Two men can carry a 21-ft section of new scaffolding 4 ft high x 4 ft wide, yet the assembly is rated at 4,200-lb. load-carrying capacity.

Capable of supporting 50 psf, the scaffolding utilizes pivoted tubular bracing. A single section of scaffolding is 4x4x7 ft, and has but four parts. Built-in ladders and braces use a simplified method of attachment.

The scaffolds convert to mobile units by adding casters, also supplied by the manufacturer. Waco Manufacturing Co., 3555 Wooddale Ave., Minneapolis, Minn.

Hendrix

Lightweight

DRAGLINE BUCKETS

IN USE THROUGHOUT THE WORLD...

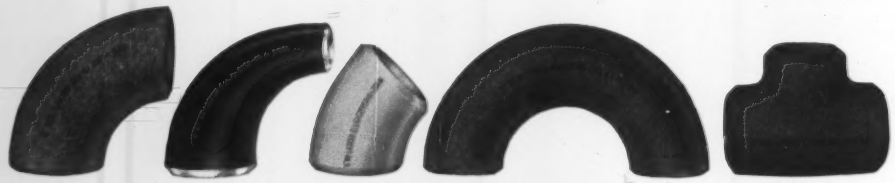
A TYPE FOR
EVERY DIGGING PURPOSE

¼ to 40 Cubic Yards

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

Depend on LADISH

- Carbon Steels
- Carbon-Molybdenum Steels
- Chromium-Molybdenum Steels
- Nickel Steels
- Chromium-Nickel Steels
- Chromium-Silicon-Molybdenum
- Wrought Iron
- Chromium Type Stainless
- Chromium-Nickel Stainless
- Molybdenum Type Stainless
- Wrought Aluminum
- Aluminum-Copper Alloys

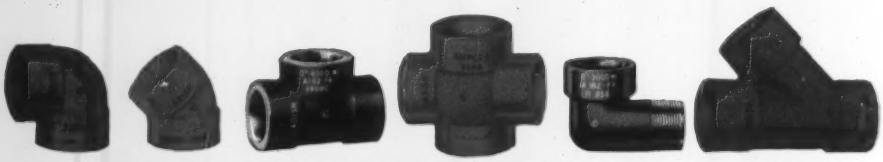


BUTT WELDING FITTINGS

½ inch through 42 inches . . .

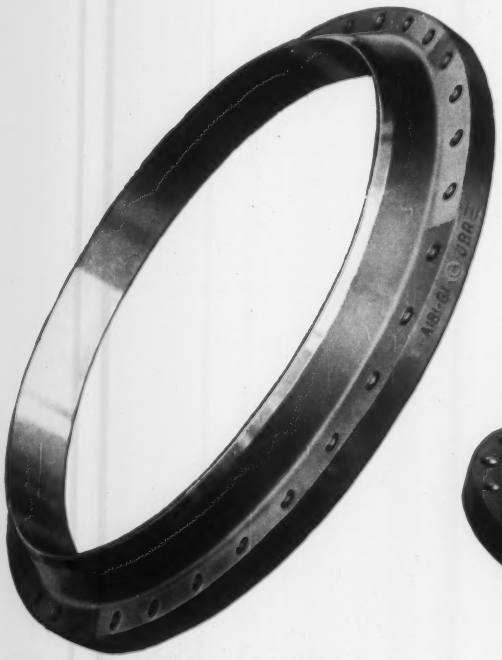
FORGED CORROSION RESISTANT—LIGHT WEIGHT and A.S.A. FLANGES

½ inch through 24 inches . . .



FORGED SCREWED OR SOCKET WELDING FITTINGS and UNIONS

⅛ inch through 4 inches . . .



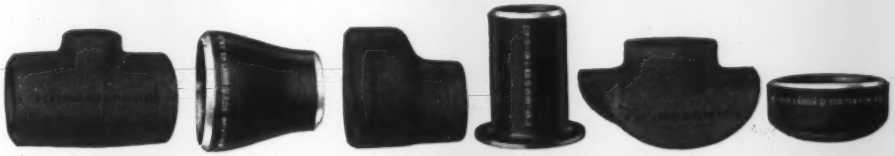
LARGE DIAMETER AND T.E.M.A.* STANDARD FLANGES up to 20 feet O.D.

*Tubular Exchanger Manufacturers Association

LONG WELDING NECKS

up to 24 inches, 150 lb. through 2500 lb.

Complete Service . . .

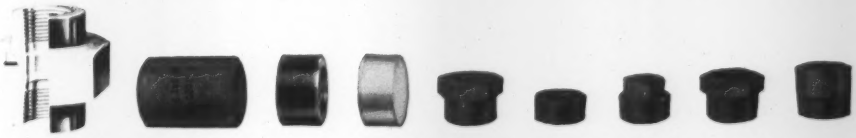


BUTT WELDING FITTINGS

Schedules 5S, 10S, 40S, 80S, and other Schedules and wall thickness.

FORGED CORROSION RESISTANT—LIGHT WEIGHT and A.S.A. FLANGES

150 lb. through 2500 lb. pressure ratings.



FORGED SCREWED OR SOCKET WELDING FITTINGS and UNIONS

150 lb. Corrosion Resistant and 2000 lb. through 6000 lb. ratings.

FOR FITTINGS FROM ANY FORGEABLE MATERIAL TO MEET YOUR SERVICE REQUIREMENTS

You get prompt, efficient service when you specify and order from the complete Ladish Controlled Quality line. Fittings *in any forgeable material* in virtually every type, size, wall thickness or pressure rating . . . are produced to one uncompromising Controlled Quality standard . . . and identified with heat code symbols pioneered by Ladish as verification of metallurgical integrity resulting from exhaustive tests made in the Ladish metallurgical laboratories.

For *complete service* on your fittings requirements, depend on the Ladish line and the services of your Authorized Ladish Distributor.

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STANDARD FLANGES up to 20 feet O.D. up to 24 inches, 150 lb. through 2500 lb.

*Tubular Exchanger Manufacturers Association

No costly maintenance problem

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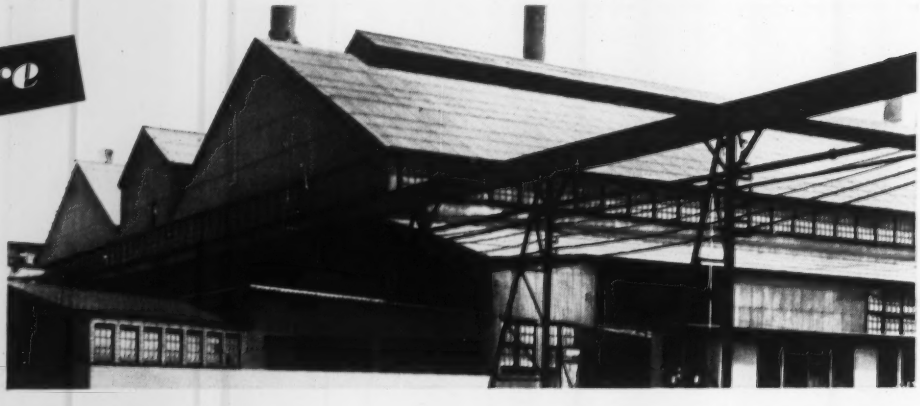
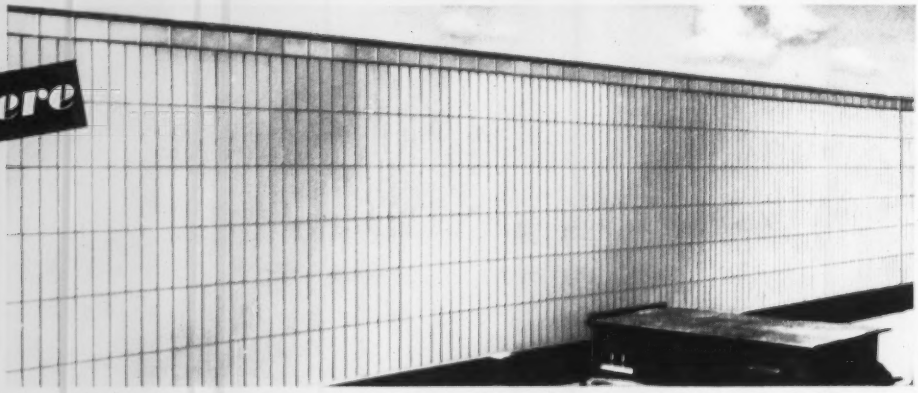


On this steel plant, roofs and sidewalls of Johns-Manville Corrugated Transite withstand corrosive fumes . . . will never corrode or rot.

...or here



On this aircraft plant, stonelike Corrugated Transite sidewalls offer years of service without paint or special treatment to preserve them.

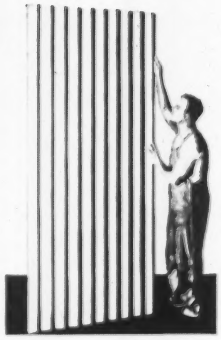
build with Johns-Manville Corrugated Asbestos Transite

For maintenance-free roofs and sidewalls plus protection from fire, rot and weather

YOU SAVE MONEY on construction and maintenance when you build with Johns-Manville Corrugated Transite®. Corrugated Transite comes in large sheets that require a minimum of framing . . . permits fast economical construction of industrial, commercial, institutional and agricultural buildings.

Made of asbestos and cement, Corrugated Transite is practically indestructible. It never needs paint or special treatment to preserve it . . . it's fireproof, rotproof and weatherproof. Corrugated Transite is also used increasingly for interiors. The streamlined corrugations and attractive shadow lines offer interesting design possibilities.

Investigate Johns-Manville Corrugated Asbestos Transite and learn how you can build quickly and easily . . . have an attractive, long-lasting, trouble-free structure. Write Johns-Manville, Box 158, Department **EN**, New York 16, New York. In Canada write 565 Lakeshore Road East, Port Credit, Ontario.



- Large sheets go up quickly
- Easy to fasten to steel
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See "MEET THE PRESS" on NBC-TV, sponsored on alternate Sundays by Johns-Manville

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Can Radio Cause Blast Accidents?

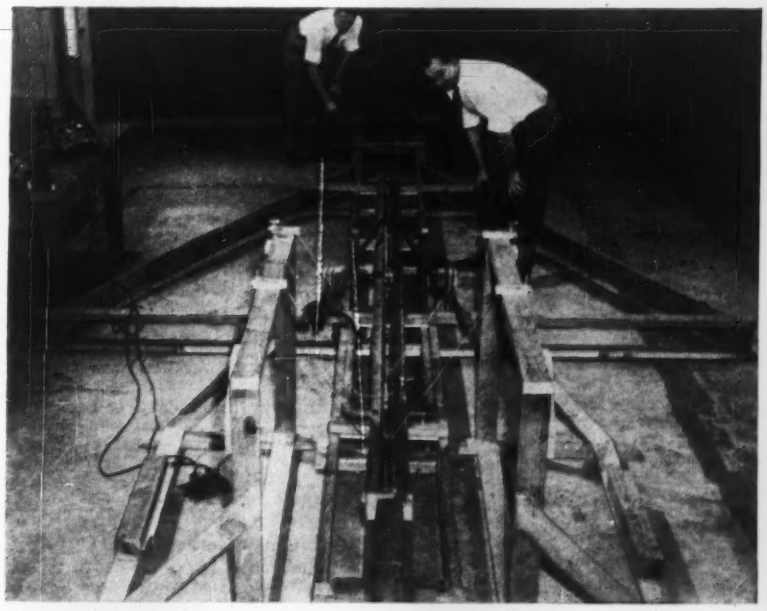
Until the mid-1940's there was little appreciation of the fact that a radio transmitter could cause premature explosion of an electric blasting cap. The discovery is credited to studies that resulted from an accident in seismic surveying for oil in the Gulf of Mexico. This occurred on a shooting boat, and, when the blasting circuit was re-constructed, it was found that radio-frequency energy had caused the blast—even though the accident was literally one chance in a million.

As a result, the explosives industry undertook an extensive investigation of the extent of the hazard and means by which it could be eliminated. The results of this investigation are given in the Institute of Makers of Explosives Pamphlet No. 20 entitled "Radio Frequency Energy—A Potential Hazard in the Use and Transportation of Electric Blasting Caps."

On the basis of its investigations, the Institute decided that there was no RF-energy hazard in the normal transportation of electric blasting caps. This is because, in their "as manufactured" form, the wires are coiled or folded in a manner which provides highly effective protection against current induction. When the caps are used, however, the wires are spread out and the investigation showed that there was then a remote chance that RF-energy could cause a premature explosion.

The Institute of Makers of Explosives prepared a table of distances to provide safety under the worst possible conditions.

(*Continued on page 68*)

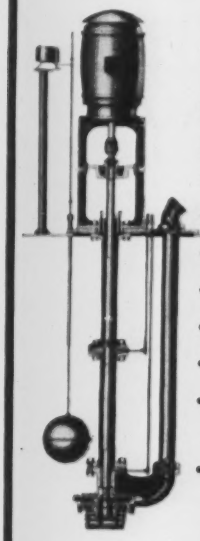


Catapult Yields Impact Stress Data

A giant "sling shot," 30-ft long, that is capable of sending aluminum bars hurtling down tracks at speeds up to 80 mph is being used at Yale University to study the propagation of stress waves through a homogeneous material.

The device fires a 3-ft long aluminum bar into another of equal length. Electric strain gages along the length of the struck bar feed into an oscilloscope and show the shape of the stress wave. A camera mounted on the oscilloscope and synchronized with the "sling shot" records the experiment. Since it takes only a small fraction of a second for the wave to travel the length of the bar, the whole system must be accurately synchronized electrically.

The device is the creation of Dana Young, dean of engineering, and Henry A. Lepper, Jr., associate professor of civil engineering. Its prototype was a pendulum affair that swung one bar into the other. While the pendulum helped tell them about dynamic stresses in the elastic range of the material, it would not give stresses high enough to study the material in the plastic range. This need dictated the high velocities produced by the "sling shot."



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2. **Size of the pump shafting.** Yeomans shafts have minimum diameters of 1-7/16".
3. **Distance between intermediate guide bearings.** Maximum space between guide bearing on Yeomans pumps is 5 feet.
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. . . Research

This table provides a safety factor of at least 5; in other words, all of the minimum distances recommended are at least five times greater than the distances at which explosions occurred during the investigation.

Transmitter Power (Watts)	Minimum Distance (Feet)
5–25	100
25–50	150
50–100	220
100–250	350
250–500	450
500–1,000	650
1,000–2,500	1,000
2,500–5,000	1,500
5,000–10,000	2,200
10,000–25,000	3,500
25,000–50,000	5,000
50,000–100,000	7,000

To avoid confusion, and because the Institute did not feel that mobile transmitters were a hazard from a practical standpoint, no table of distances was set up for that type of transmitter.

Frame Wall Anchorage To Be Studied for FHA

The National Research Council has appointed a committee of 15 to study "Anchorage of Exterior Frame Walls to Various Types of Foundations" for the Federal Housing Administration.

The study will include:

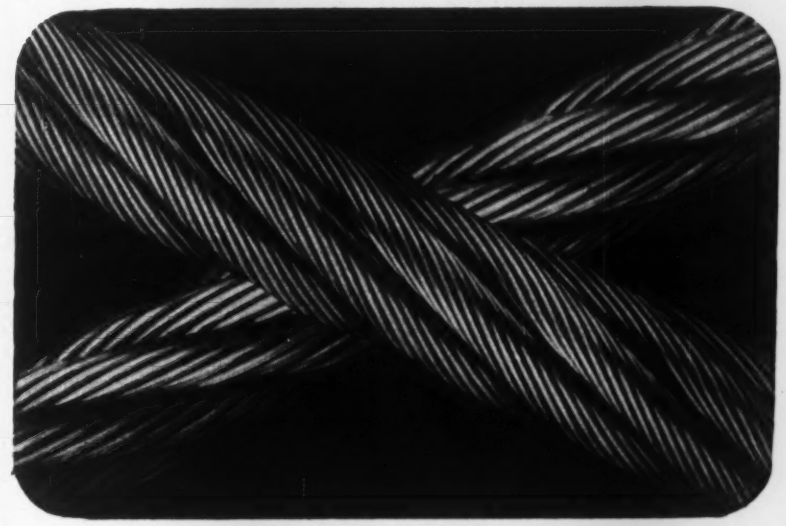
- The nature and magnitude of forces to be resisted by a residential structure and its anchorage to the foundation.
- Wood and metal framing systems in relation to their anchorage to: (a) continuous foundation walls of both monolithic and unit masonry construction; (b) individual piers; (c) piers with curtain walls; and (d) slab-on-ground.
- Adequacy of Minimum Property Requirements in respect to anchorages.

The group is set up as an advisory committee to the Building Research Advisory Board. It is expected to complete the study by mid-February.

New Computer Center

Georgia Tech's new $1 million Rich Electronic Computer Center, features a $500,000 high-speed, large-scale digital computer—the Remington Rand ERA 1101, forerunner of UNIVAC; and a $170,000 medium-scale, electronic computer—National Cash Register Company's NCR 102D. The facility, financed by a grant from the Rich Foundation of Atlanta, will serve education, industry and research.

FIRST WE DEVELOPED 1105 ROPE WIRE.



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1105 takes Royal Blue out of the ordinary wire rope class.

1105 is a rope wire that's new—that's stronger. It's the biggest news in many years.

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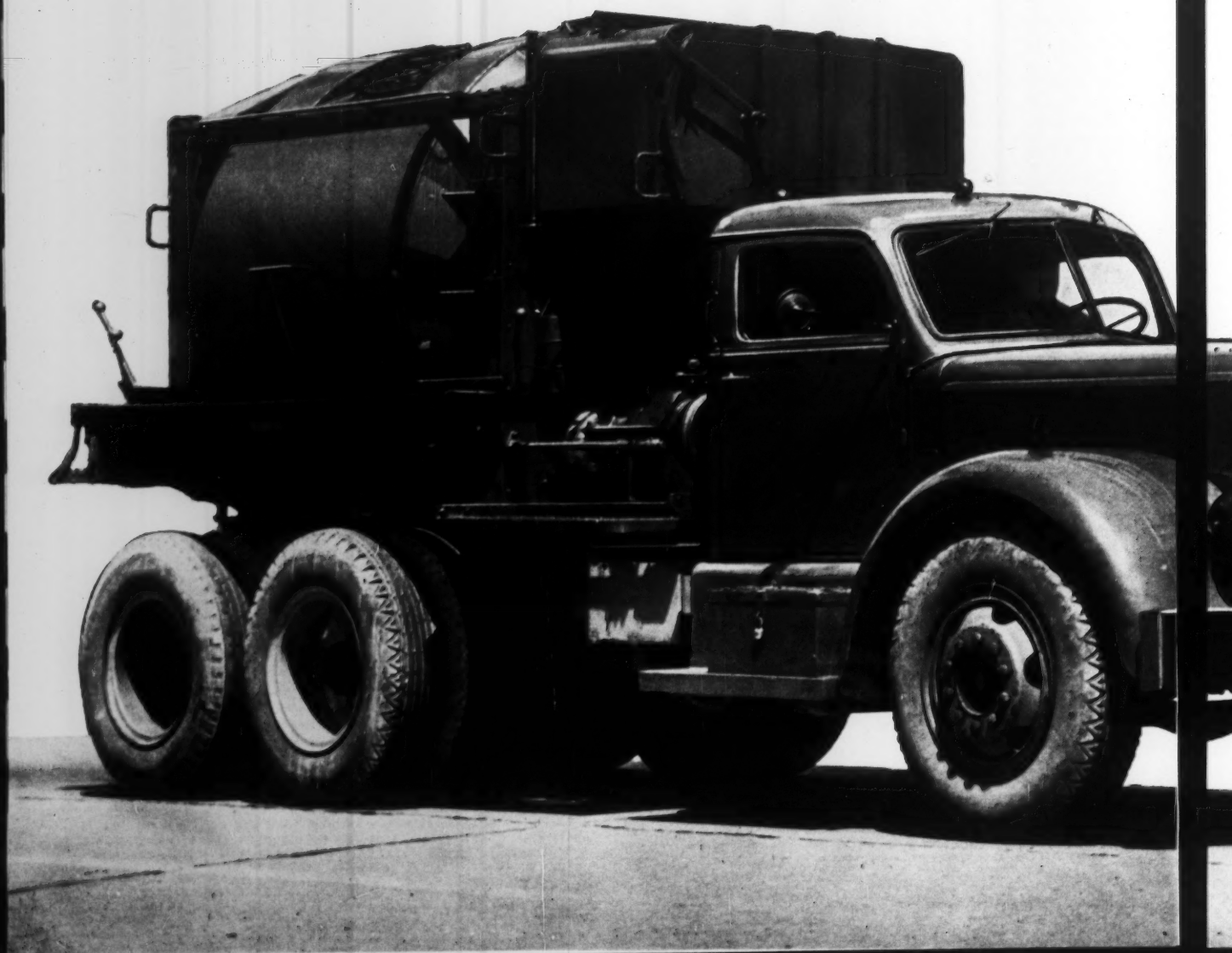
New TDA® lightweight

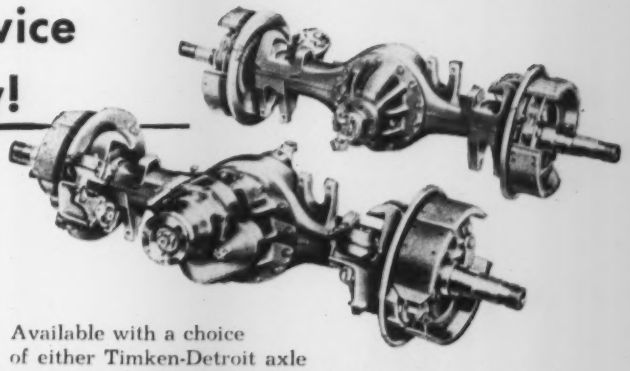
7,500 EXTRA TON-MILES



highway tandem gives

PAYLOAD A YEAR*

...built almost entirely from interchangeable standard axle parts for easier service and lower parts inventory!



This new lightweight tandem brings two important new advantages to construction truckers – greater payload capacity† and much easier maintenance.

More than two hundred pounds lighter than any other unit of the same capacity, this new TDA tandem will save a trucker 7,500 deadweight ton-miles during an average 75,000 mile year. This means more payload and profit where it counts.

Almost all of the parts – gears, pinions, differentials and brakes – used in this new tandem are interchangeable with parts from Timken-Detroit® standard single axles. This assures operators less down time . . . faster, simpler, more economical service . . . and smaller replacement parts inventory.

Available with a choice of either Timken-Detroit axle connecting groups, or brackets to accept other approved chassis hook-up parts. Plus these additional advantages with the Timken® lightweight tandem:

TDA Inter-Axle Differential Divides Torque Evenly Between Axles . . . and yet permits wheels of one axle to revolve faster or slower than wheels of the other axle. This means both axles are always doing equal amounts of work . . . driving parts and tires last longer.

Driver-Controlled Lockout – with TDA inter-axle differential, the driver can obtain the advantages of straight-through drive under slick or icy conditions by locking out the differential at *any* driving speed.

Big, Dependable Hypoid Gears rotate in conventional direction for maximum gear and bearing life.

This new highway tandem insures new payload profits, faster, easier service and operating economies for construction truckers everywhere. For complete information contact your nearest vehicle dealer or branch.

*based on 75,000 highway miles a year.
†for the same gross vehicle weight.

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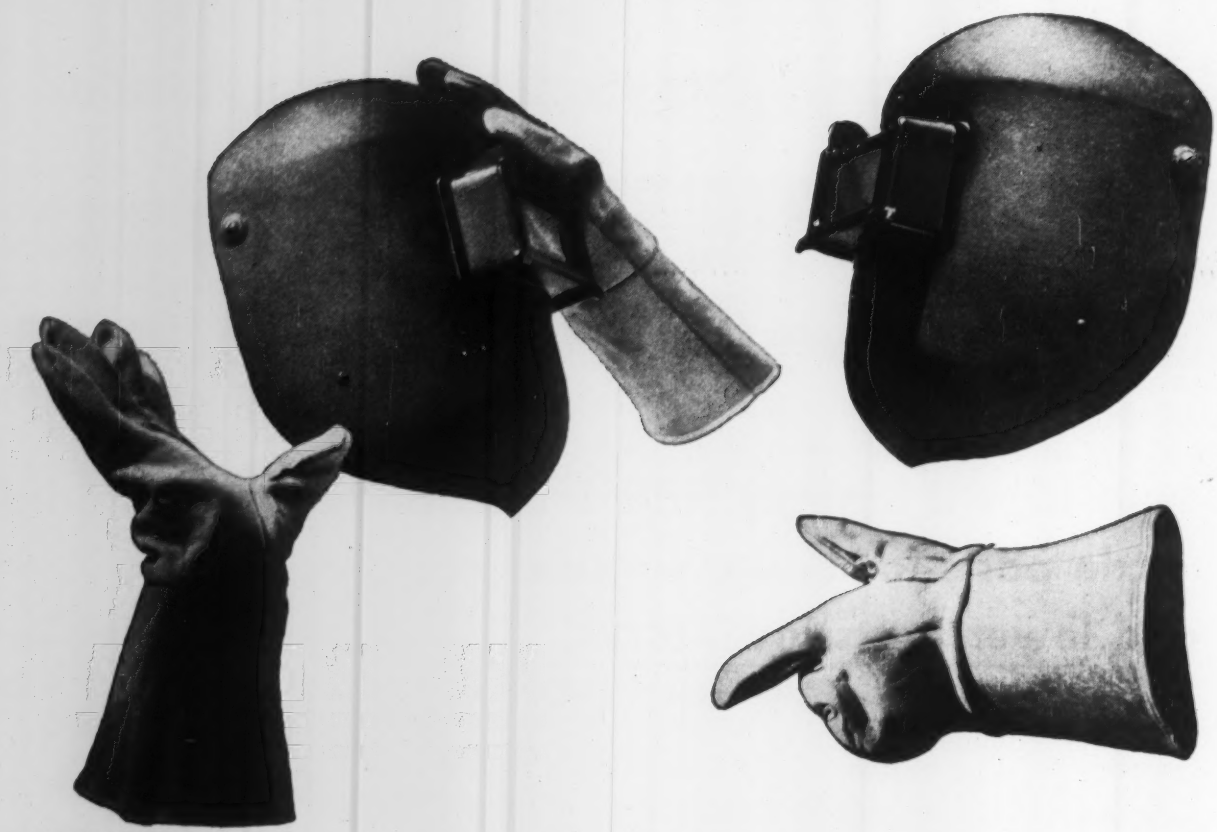

WHAT—*HANDLES LIKE CARBON STEEL?*

That's right. 3 times stronger than carbon steel, Lukens "T-1" steel can be readily welded without special joint designs or procedures.

Although Lukens "T-1" steel is a tough, high strength, heat treated steel, equipment builders will find that the techniques of working with this new steel are no different than with carbon steel. Recognizing that higher strength steels require higher pressures to form, proper design procedures will permit this low carbon, quenched and tempered alloy plate steel to be fabricated not only in the shop but also in the field. Those items of equipment which may not have to be stress relieved for dimensional stability or other special reasons can be fabricated of Lukens "T-1" steel to take advantage of its tough "as-welded" characteristics.

In addition to easy fabrication, Lukens "T-1" steel has other benefits of equal value to equipment builders. Three times stronger than carbon steel, this new steel has lighter weight and reduced thickness in comparison to heavier, thicker plates of carbon steel, thereby reducing material, fabrication and shipping costs. Lukens "T-1" steel's excellent resistance to the combination of wear and impact abuse lowers maintenance and replacement costs, lengthens equipment life. Lukens' range of steel plate sizes—including the widest and heaviest plates available anywhere—makes possible additional savings for builders through the use of wider plates that require fewer welded seams.

A new addition to Lukens' complete line of carbon, alloy and clad steels, this new steel's unusual combination of properties suit it especially to applications in pressure vessels, bridges, shipbuilding, construction machinery and general industrial equipment. On problems of design, material selection, application and fabrication techniques, Lukens offers full technical assistance. If you would like further information on Lukens "T-1" steel, write to Manager, Marketing Service, 774 Lukens Building, Lukens Steel Company, Coatesville, Pennsylvania.

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"T-1" STEEL

To get the new, 28-page book on Lukens "T-1" steel, ask for Bulletin 781.

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Men and Jobs

Consultants Chosen

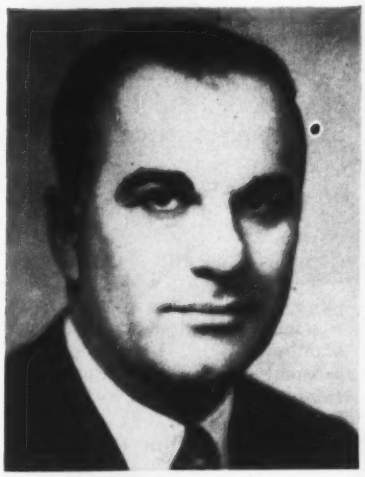
Snake River project gets three hydro-dam experts

A three-man board of consulting engineers has been chosen by Idaho Power Co. and Morrison-Knudsen Co., Inc., contractors, for the utility's Snake River hydro-electric projects at Brownlee, Oxbow and Hells Canyon (ENR Nov. 17, 1955, p. 25).

They are L. C. Steele of San Francisco, Calif., James P. Growdon of Pittsburgh, Pa. and Harold T. Stearns of Hope, Idaho.

Steele, a specialist in dam design, was formerly vice president and chief engineer of Pacific Gas and Electric Co. During his 42 years of utility experience, he has worked on some 30 major hydro projects including the Aswan Dam on the Nile River (ENR Nov. 24, 1955, p. 67) and the Kenney Dam of the Alcan-Kitimat project.

Growden was previously chief hydraulic engineer for the Aluminum Co. of America and is a retired colonel of the Corps of Engineers. He originated the use of vibrators for placing concrete in dam construction, and is a pioneer in design and construction of



E. M. Kowkabany

Named Vice President

Edmund M. Kowkabany, former assistant to the president of Burns and Roe, Inc., New York engineers and constructors, has been named vice president of the company. He has served as project director on several Burns and Roe projects since joining the organization in 1941 and is a member of the board of directors.

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Shown, model 7014 with "A" standard. Sold complete with tripod case and field equipment. Model 7020, same unit with "U" standard, also available.

. . . yet costs less than other quality engineers' transits

LIKE every White quality-built instrument, these engineers' transits give you greater dollar-for-dollar value than any other comparable unit.

For example: White uses a recently-developed Swiss Dividing Engine to cut graduations into solid silver. This insures super-precision from the beginning, safeguards it through more years of hard field usage.

In addition, White engineers' transits give you internal focusing, covered leveling screws, and coated optics. These and a host of other design and operating features combine to give you a transit unsurpassed for ease, speed, accuracy, economy and long-lived dependability. Write for Bulletin 156 and the name of your nearest dealer. DAVID WHITE COMPANY, 317 W. Court Street, Milwaukee 12, Wisconsin.

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Even at long distances under adverse weather conditions, you get a clear, sharp image — without halation.

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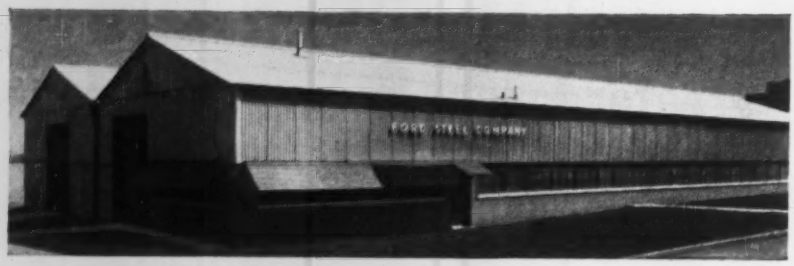
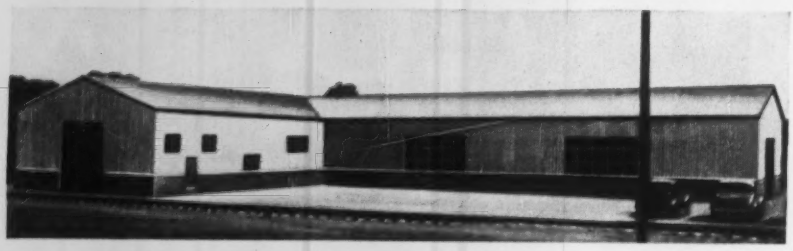


AND LOWER BUILDING COSTS . . .



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rock-fill dams with sloping, impervious earth cores.

Stearns, a specialist in geology of dam sites, was with the U. S. Geological Survey from 1921-1926 and was geologist-in-charge of Pacific investigations during the latter part of World War II. Since 1947, he has been working on engineering studies of various dam sites throughout the Pacific Northwest.

Universal Atlas Announces Engineering Staff Changes

Universal Atlas Cement Company, subsidiary of U. S. Steel Corporation with headquarters in New York, has announced one retirement and two promotions in its engineering department.

Chester D. Rugan has been named assistant vice president for engineering, and Robert B. Jordan as chief engineer, following retirement of Raymond L. Walsh, assistant vice president and chief engineer, after 30 years of service with the company.

Jordan's association with U. S. Steel began in 1937 in the construction engineering department of South Works in Chicago. He later became assistant chief construction engineer for the Fairless Works and in 1953 joined Atlas as assistant chief engineer. Rugan has been with the engineering department 25 years and became assistant chief engineer in 1953.

Walsh had served as chief engineer since 1953.

P. A. Nelson Receives Award

Paul A. Nelson, who recently retired after 20 years of service with the Bureau of Reclamation, has received the Meritorious Service Award from the Department of Interior.

While in the Bureau's Denver office, Nelson aided in the construction of the Central Valley Project in California. In 1948, he became assistant regional supervisor of operation and maintenance in Sacramento.

New Association Formed

Firms engaged in asphalt road construction in Iowa have formed the Asphalt Paving Association of Iowa, with headquarters in Des Moines.

Head of the new association, designed to promote use of asphaltic road materials, is Don Kaser of Des Moines.

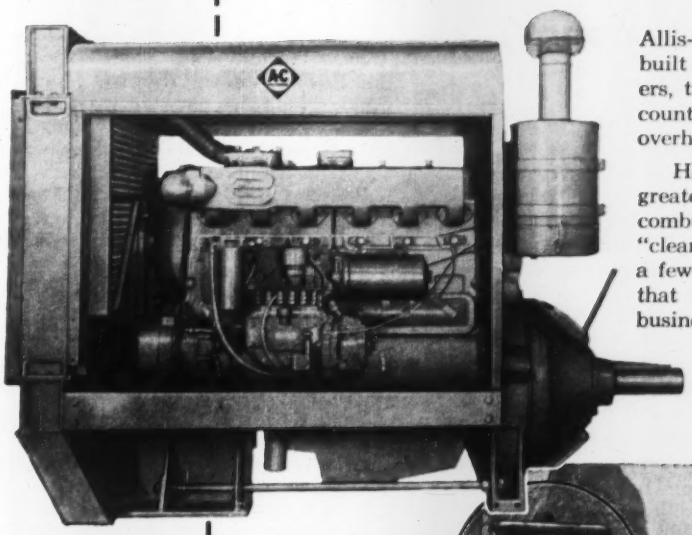
The organization will cooperate with the National Asphalt Institute and becomes the 22nd state association of its kind.

(*Men & Jobs continued on page 76*)

ALLIS-CHALMERS DIESELS

average 6000 hours

before overhaul in toughest service



Allis-Chalmers dyna-swirl diesels are heavy-duty built for the long run. Whether they power crushers, trucks, scrapers, shovels or dozers — you can count on an average 6,000 or more hours before overhaul. This means money in your pocket.

Heavy-duty construction . . . 10 to 17 percent greater displacement . . . controlled turbulence combustion resulting in lower peak pressures . . . "clean" simple design with fewer parts are only a few Allis-Chalmers dyna-swirl diesel advantages that make them the longest-life engines in the business.

Ask your nearby Buda Division Distributor to prove the superiority of these engines. There's no obligation. Write for illustrated bulletin and data.

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6DA-844 diesel engine powering Telsmith Crusher

BC-23

ALLIS-CHALMERS

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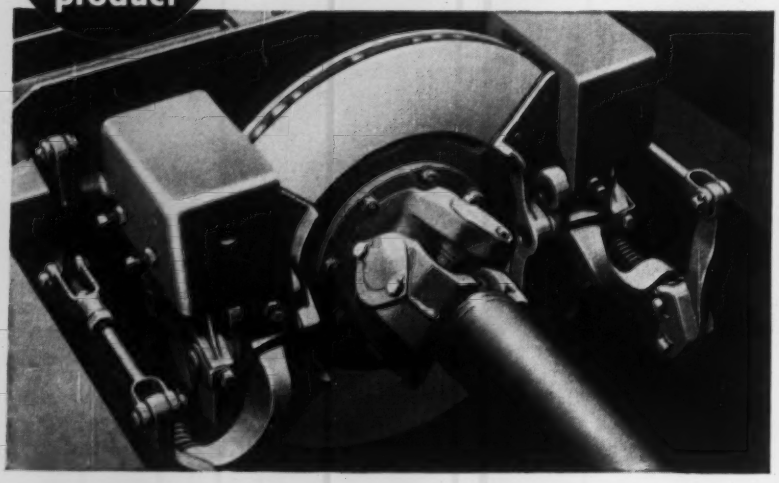
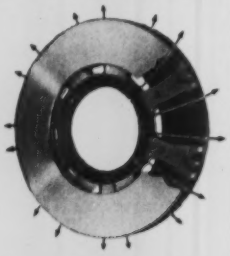
It Pays to Specify TRU-STOP Brakes



because they give you Real Emergency Braking...Smooth, Positive Stops...Safe Parking... and Lower Service Costs



Longer Lining Life

• The terrific heat generated in braking cuts lining life. TRU-STOPS quickly dissipate this heat. Most of the disc is exposed to the air even during braking. And a cooling jet of air circulates through the disc, prolongs lining life.

Real Emergency Braking. TRU-STOPS *are real emergency brakes—not just "parking brakes."* They serve as auxiliary brakes on long down-grades and can bring the vehicle to a smooth, quick stop if service brakes suddenly fail.

In fact, TRU-STOPS can do this and more. They can handle the vehicle with safety so it can be removed from the road.

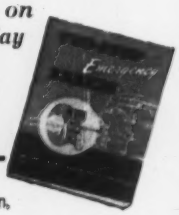
Smooth, Positive Stops. Pressure is in direct proportion to the pull on the brake lever. There is no dangerous self-energizing or "over-braking."

Safe Parking. TRU-STOPS hold on grades—prevent "parking brake" accidents.

Lower Service Requirements. TRU-STOPS are mounted directly on the drive shaft. Their simplicity of design and accessibility reduce maintenance requirements. Relining or adjustment is a simple job for any mechanic with ordinary tools. It is not necessary to drop drive shaft.

Specify TRU-STOPS for factory installation on your next vehicle.

This Booklet gives the complete story on TRU-STOP Brakes. Send for your copy today



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R. L. Bowman Elected Officer Of Bechtel International

Robert L. Bowman, manager of construction for Bechtel Corporation's Pipeline Division, has been elected a vice president of the affiliated Bechtel International Corporation, San Francisco, Calif.

Associated with Bechtel since 1940, Bowman has supervised construction of some of the firm's major pipeline projects. Among these were the Trans-Arabian Pipeline across Saudi Arabia, the Pacific Gas and Electric Company's 34-in. high pressure gas transmission line from Topock to Milpitas, Calif., and the Lakeland Pipeline across the Straits of Mackinac.

Bowman was named construction manager in 1954 and has been responsible for estimating, construction, inspection and other supervisory functions on Bechtel-built pipeline projects.

Robert Horton Gets New Title With Sanitation Commission

Robert Horton has been named assistant director of staff operations for the Ohio River Valley Sanitation Commission.

Since joining the commission in 1949, Horton has been engaged in the investigation of pollution conditions on the Ohio and Wabash Rivers. He is now devoting much of his time to assembly of Ohio River water-quality data and the correlation of information for recommendations on industrial waste control.

He came to the commission after six years' service with the U. S. Army Sanitary Corps in Peru and San Salvadore, where he was assigned to the office of the Coordinator of Inter-American Affairs. During that period he directed installations of several sanitary engineering projects and served as advisor to the national governments in sanitary matters.

(*Men & Jobs continued on page 78*)

SAVE 8 WAYS!

...with Monotube Foundation Piles

1. EASIER HANDLING. Because of rigid, light-weight construction, tapered steel Monotubes are easy to transport and handle on the job.

2. STANDARD DRIVING EQUIPMENT. Light, mobile rigs and standard hammers are all you need to drive Monotubes. No need for an internal mandrel.

3. RAPID INSTALLATION. Monotubes "go in" fast because of easier handling and rig mobility. One Monotube can be picked up while another is being driven . . . no lost time waiting to get pile in leads.

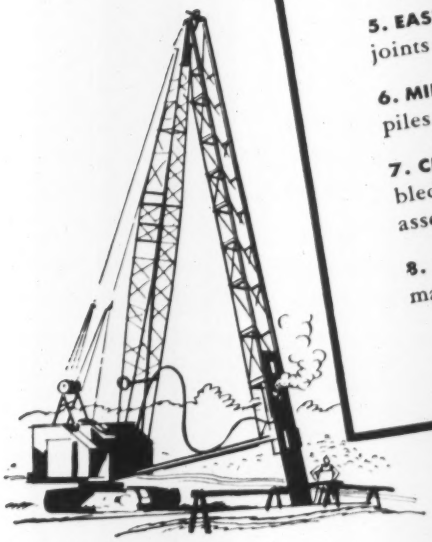
4. RANGE OF LENGTHS. Since Monotubes are manufactured in varying sections, *any* length requirement can be met. They can be driven as a long pile, or in short sections for underpinning work.

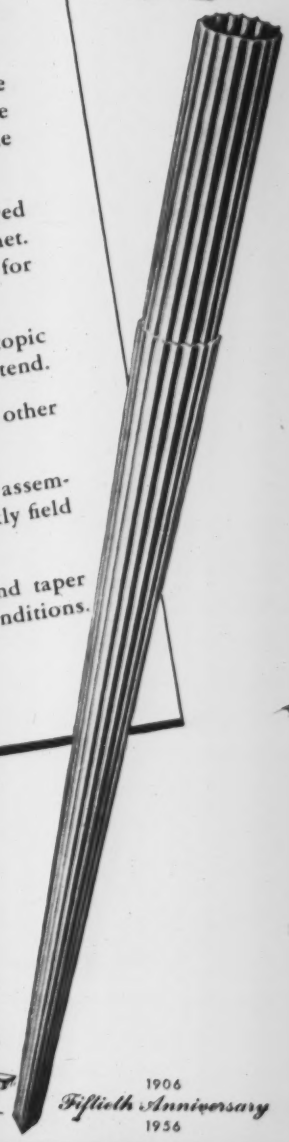
5. EASILY EXTENDED. Fast, single girt welding of telescopic joints makes Monotubes the easiest integral pile to extend.

6. MINIMUM WASTE. Cut-offs can be re-used to extend other piles.

7. CHOICE OF ASSEMBLY. Monotubes can be factory assembled to any length. If desired, sections can be quickly field assembled.

8. VERSATILITY. Variations in diameter, gauge and taper make Monotube Piles readily adaptable to all conditions.





ENGINEERING SERVICE. Union Metal engineers, backed by a wealth of application, performance and test data, are always ready to assist with your "hard to solve" foundation problems.

For further data on Monotube piles for bridge, pier or highway construction, and foundations for every type and size of building, request Catalog No. 81. Address The Union Metal Manufacturing Company, Canton 5, Ohio.

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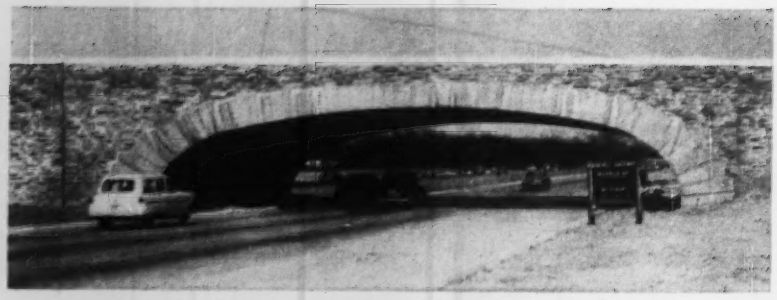


15 working days, start to finish, using Richmond Tyscrus

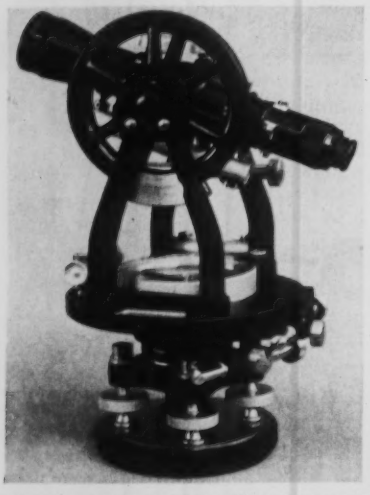
Hendrickson Brothers' veteran construction boss lays concreting achievement on Merrick Ave. Bridge to "unbeatable combination."

Cornell Kasso, General Foreman of Construction on the new Southern State Parkway in Long Island, gives credit for Hendrickson Brothers' outstanding accomplishment to *"this unbeatable combination—a good experienced crew, good weather, and the best in tools and material, including Richmond Tys. You can pour fast and heavy in all weather when you use Richmond Tyscrus. They always hold—with plenty to spare. I've used Richmond products for thirty-three years and they've never failed me."*

One big reason is the safety margin that's built into Richmond Tyscrus. All Richmond Tyscru production is plant-tested for load strength on modern Riehle hydraulic testing machines. In every size, their *actual* load strength far exceeds their *published* load. Independent scientific tests conducted by Brooklyn Polytechnic Institute show this fact clearly. *For example:* 1" 2-strut Tyscru, catalog-rating: 18,000 lbs., ultimate test strength: over 27,000 lbs.

Save time and money—be safe—use Richmond on *your* next job.

RICHMOND SCREW ANCHOR COMPANY, INC.—816 Liberty Ave., Brooklyn 8, N. Y. and 315 South Fourth St., Saint Joseph, Mo.



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. . . Men and Jobs

Men and Jobs Briefs . . .

• **Associations**—**Arno T. Lenz,** civil engineering professor at the University of Wisconsin, is named president of the Wisconsin section of ASCE . . . **G. A. McBride,** who's been with Infilco, Inc. since 1935, is appointed vice president of the Michigan Sewage and Industrial Waste Association . . . **Kenneth Bentson** becomes president of the Phoenix chapter of the Arizona Building Contractors Association.

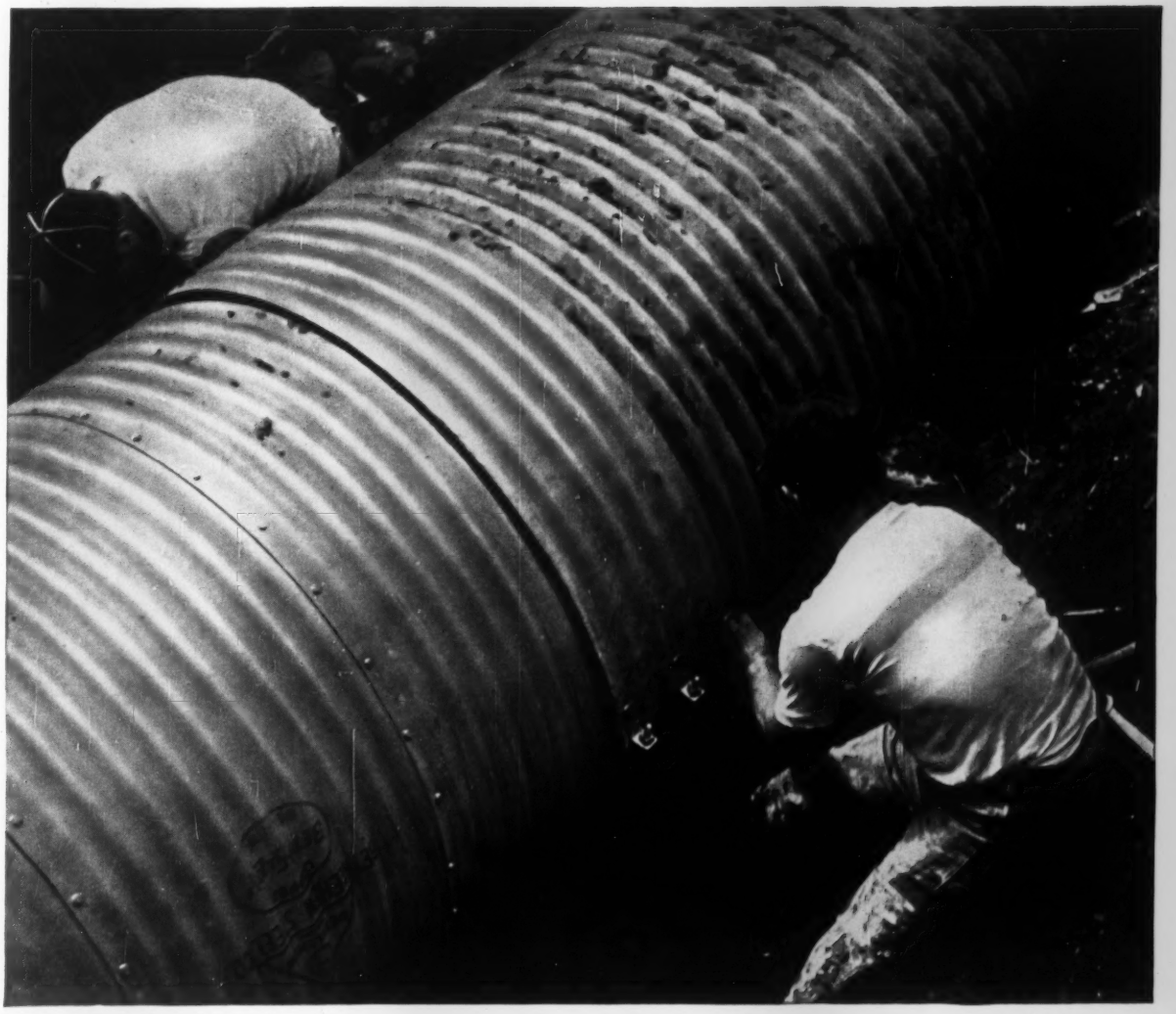
• **Corps of Engineers**—**Malcolm R. Gilpin, Jr.,** construction chief for the Alaska District for nearly eight years, receives the Army's Meritorious Civilian Service Award for "superior accomplishment" in the Alaskan construction program . . . **Raymond W. Sauer,** executive assistant in the Vicksburg, Miss., District and **J. W. Hamm** of the Memphis District Branch are assigned temporary duty in San Francisco for flood rehabilitation work.

• **Business**—Walsh Construction Company, Davenport, Iowa, names **D. G. Aronberg, J. J. Murphy** and **E. M. Shanley** as vice presidents and **T. F. Taylor** as chief engineer . . . **S. F. McCammack,** former superintendent of the Portland, Ind., power and water plants, joins Bevington, Taggert and Fowler, consulting engineers in Indianapolis.

Joseph P. Murphy, chief estimator for Luria Engineering Company, New York and Bethlehem, Pa., designer and producer of standardized industrial steel buildings and aircraft hangars, is promoted to plant manager . . . **Lloyd B. Knutsen,** formerly with H. J. Heinz Co., Pittsburgh, becomes manager of Allis-Chalmers' buildings and properties department . . . **Edward Kister** is appointed head of the architectural section of the Application and Development Division of Allegheny Ludlum Steel Corp.

• **Education**—**Gerald H. Teletzke,** formerly on the engineering staff of the University of Wisconsin, joins the sanitary engineering faculty of Purdue University . . . **Charles W. Weiss** is appointed associate professor of sanitary science at the University of North Carolina School of Public Health.

• **Retirements**—**D. Harold McMillan,** senior structural designer for the California Division of Architecture, after 39 years . . . **Joseph M. Baker,** construction management engineer with the Corps of Engineers in Portland, Ore., after 22 years.



Pipe made of Beth-Cu-Loy is easy to install

This is a 48-in. drainage line fabricated of corrugated Beth-Cu-Loy galvanized steel. Workmen are joining a 14-ft length to the rest of the line. You can see how simple and quick this operation is: a band of Beth-Cu-Loy secured around the joint with a few turns of a wrench on the bolts.

No sealing compound needed here, no mortar, no waiting for the joint to set. The laying of the pipe can move as fast as the trenching, and the trenching itself is a less "finicky" job with Beth-Cu-Loy because of steel's strength and flexibility. Light weight of the pipe simplifies laying.

Pipe made of Beth-Cu-Loy conforms to grade and alignment without pulling apart. Further, it will flex with the fill to equalize loads around it. It absorbs vibration, impact and the shifting effect of weather changes.

Bethlehem manufactures the Beth-Cu-Loy galvanized corrugated and flat steel stock used by pipe fabricators. If you would like further information about Beth-Cu-Loy, or the names of those who make pipe with it, just get in touch with the nearest Bethlehem office.

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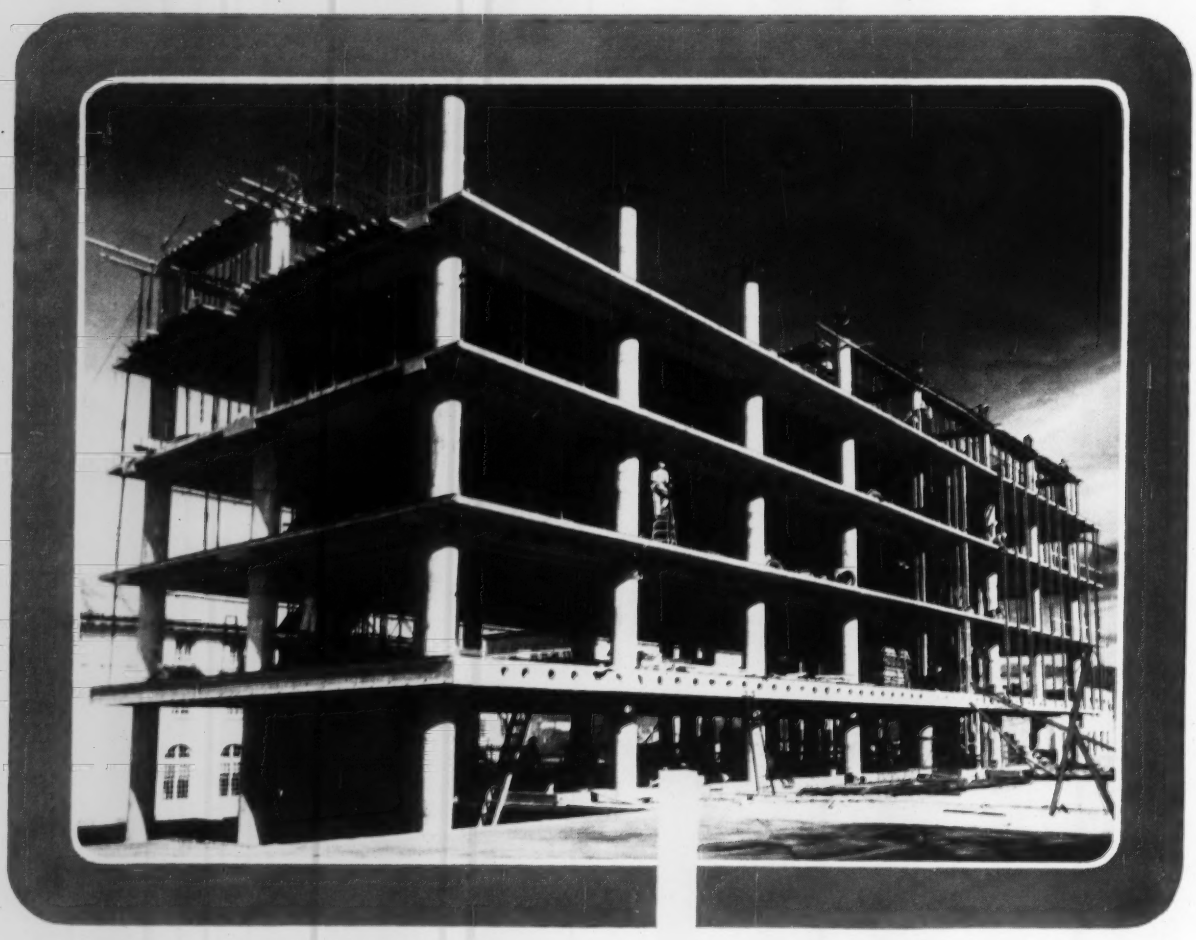
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



CONCRETE FRAMES AND FLOORS

Quality construction for Modern Office Buildings

These photos of the Simms Building in Albuquerque, New Mexico show the use of reinforced concrete frame and floor construction adapted to a modern office building. The first floor covers an entire city block and is surmounted by a 12-story structure and penthouse.

There are many reasons for the growing popularity of concrete frame and floor construction. It offers great strength, unusual durability, firesafety and economy. Its moderate first cost, low maintenance cost and long life add up to ***low annual cost,*** which pleases owners and investors. And competitive bids show that this method saves up to 40% on frame and floor cost.

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Upper photo shows 12-story section of Simms Building above the roof of block-square first floor. The floors throughout are 6-in. thick reinforced concrete using a wide beam design and cantilevered 5 ft. outside the supporting columns. Architects and engineers: Flatow-Jason Moore. Contractor: Lembke, Clough & King, Inc. Both of Albuquerque.

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Books

Code's 50th Anniversary

NATIONAL BUILDING CODE—Golden Anniversary Edition. 322 pp. The National Board of Fire Underwriters, 85 John Street, New York 38, N. Y.

The 1955 edition of the National Building Code is a completely revised volume of the well-known code first published by the National Board of Fire Underwriters in 1905. It is one of the oldest of the three model codes developed by the National Board of Fire Underwriters—a nationwide organization of capital stock fire insurance companies dating from 1866. The three model codes of the board are its National Electric Code (1895), National Building Code (1905), and National Fire Prevention Code (1930).

The new edition revises several requirements of wide interest in building design:

• **Exterior building walls**—For exterior walls on a property line, a fire resistance of three hours is required and the total area of windows in such walls is restricted. As the distance from the lot line increases, the fire resistance requirement is lessened, and the amount of permitted window area increased, until a separation distance of 30 ft is reached. At that distance with certain exceptions, the walls may be made entirely of glass or other noncombustible materials of low fire resistance.

For industrial buildings of exceptionally large areas, a separation of at least 80 ft is required from lot lines, and construction is limited to noncombustible materials. Sprinklers are needed unless the occupant uses noncombustible materials throughout.

• **Less Wind Damage**—An appendix to the new code tells how to construct buildings to minimize windstorm damage. This appendix gives detailed suggestions on roof anchorage, attachment of roof coverings and other design features.

• **Plastics in building**—In making provision for the use of plastics in building construction, the new code relates their use to the fire requirements of other building materials. It also gives special conditions where plastics may be used with little fire hazard. In addition it has special provisions covering the use of plastics in windows, skylights and light-diffusing ceilings.

• **If sprinklers, more space**—The new code permits larger floor areas between fire walls, if automatic sprinklers are installed than previous editions have allowed.

The National Building Code contains 16 appendices that give supplementary information. One of these covers the installation of heating appliances. Another contains a tabulation of fire-resistance ratings or walls, floors and other building parts.

NBFU will furnish on request up to 50 copies of the codes, without cost, to any municipality adopting it, and as many other copies as may be desired at a nominal price.

New Engineering Books

WATER—The 1955 Yearbook of Agriculture. Compiled by the United States Department of Agriculture. 751 pp. For sale by the Superintendent of Documents, Washington 25, D. C. $2.00

AMERICAN STANDARD SAFETY CODE for Elevators, Dumbwaiters and Escalators—290 pp. Published by the American Society of Mechanical Engineers, 33 W. 39th St., New York 18, N. Y. $3.50 (paper); $4.00 (cloth)

THE FROST PENETRATION PROBLEM IN HIGHWAY ENGINEERING—By Alfreds R. Jumikis. 162 pp. Rutgers University Press, New Brunswick, N. J. $5.00

THE MODERN BUILDING ENCYCLOPEDIA—Edited by N. W. Kay. 768 pp. The Philosophical Library, London, and 15 East 40th St., New York. $15.00

CONSTRUCTIONAL STEELWORK—By Oscar Faber. The Philosophical Library, London, and 15 East 40th St., New York 16, N. Y. 368 pp. $12.00

ARCHITECTS DETAIL SHEETS—Edited by Edward D. Mills. 228 pp. Iliffe and Sons, London, and Philosophical Library, 15 East 40th St., New York 16, N. Y. $12.00

Reports and Pamphlets

HIGHWAY RESEARCH REVIEW—A summary of National Activities Reported by The Highway Research Correlation Service. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $3.00

MANUAL OF TRIANGULATION COMPUTATION AND ADJUSTMENT—Special Publication No. 138 (1955 Reprint) U. S. Coast and Geodetic Survey. For Sale by the Superintendent of Documents, Washington 25, D. C. Price $1.25

(Continued on page 82)

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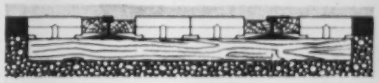
change "cross" crossings



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Stop unnecessary damage to industrial cars, trucks and cargo with smooth, durable Permacrete pre-cast concrete Crossing Slabs. Time, weather and high-impact traffic play havoc with ordinary railroad crossing materials but Permacrete slabs provide the maximum in strength and safety, coupled with low initial cost and no down time for repairs. Don't settle for less . . . Get Positive Performance with Permacrete.

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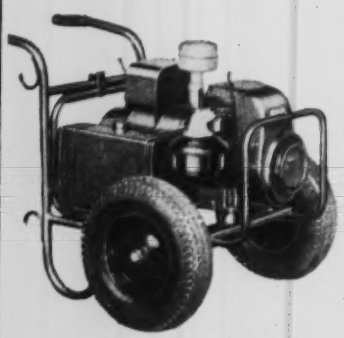

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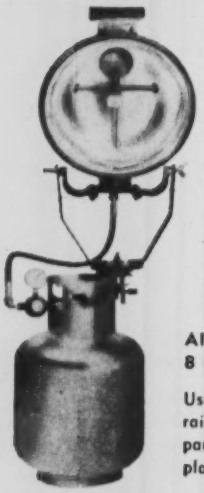

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Books

ENDURANCE OF FULL-SCALE PRETENSIONED CONCRETE BEAMS—A reprint of Progress Report No. 5, Department of Civil Engineering and Mechanics, Lehigh University, Bethlehem, Pa. $1.50

AN EQUATION FOR PREDICTING A MEAN DROP SIZE IN A HIGH SPEED SPRAY—University of California Press, Berkeley, Calif. $0.35

BEAM DEFLECTION WHEN IT IS CONSTANT OR VARIABLE—Compiled and published by Thomas F. Hickerson, 108 Battle Lane, Chapel Hill, N. C.

REVIEW OF CURRENT RESEARCH AND DIRECTORY OF MEMBER INSTITUTIONS—1955—Engineering College Research Council, New York University, New York 53, N. Y.

PROCEEDINGS OF THE FOURTH ANNUAL OHIO WATER CLINIC—1955—Division of Water, Ohio Department of Natural Resources, Columbus, Ohio

CALCIUM CHLORIDE FOR WINTER MAINTENANCE—Calcium Chloride Institute, 909 Ring Building, Washington 6, D. C.

BALTIMORE AND THE H-BOMB—Bureau of Business and Economic Research, University of Maryland, College Park, Md.

OPPORTUNITIES IN THE BUREAU OF PUBLIC ROADS FOR YOUNG ENGINEERS—U. S. Department of Commerce, Bureau of Public Roads, Washington 25, D. C. $0.25

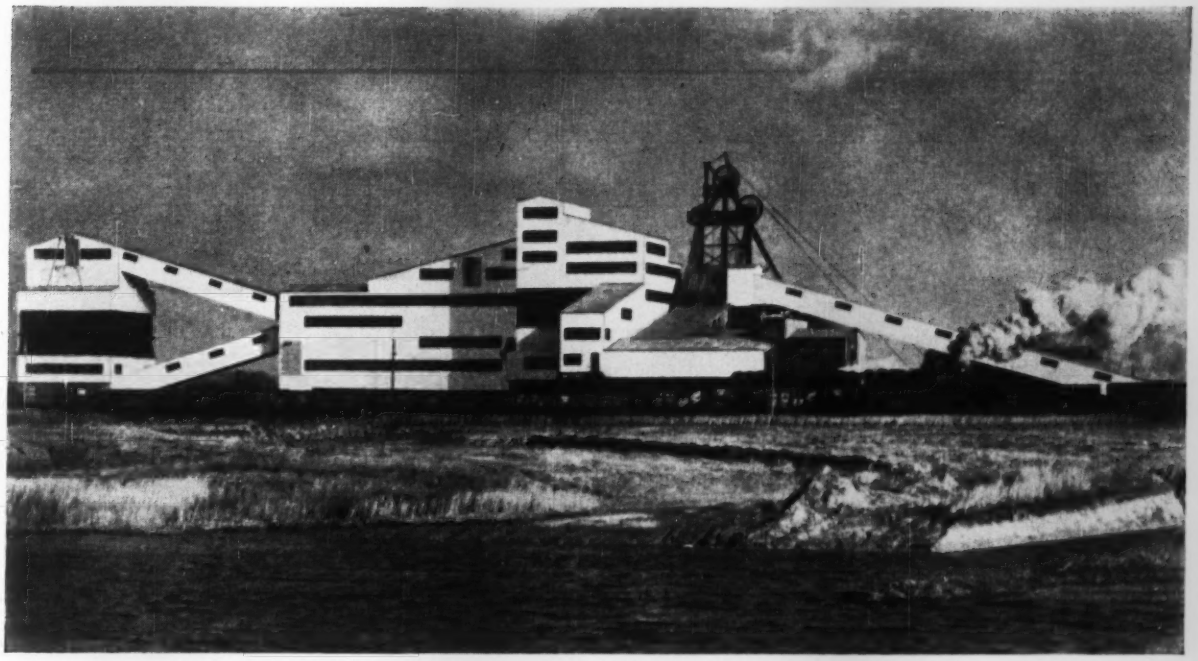
EFFECTIVENESS OF HAMMER-DRIVEN SCREWTITE MASONRY NAILS IN CONCRETE—Wood Research Laboratory, Virginia Polytechnic Institute, Blacksburg, Va.

THE WRITINGS OF DAVID BARNARD STEINMAN—A bibliography. Prepared by The Staff, Rensselaer Polytechnic Institute Library, Troy, New York.

CONCRETE ROADS IN BELGIUM AND WESTERN GERMANY 1954:—Their Structural Design and performance—Road Research Technical Paper No. 35, Road Research Laboratory, Harmondsworth, Middlesex, England. $0.75

PLANNED REFUSE DISPOSAL—Prepared by the Joint Administrative Staff, County Sanitation Districts of Los Angeles County, Calif.

THE WASHO ROAD TEST—Part 2: Test Data, Analysis and Findings—Special Report No. 22 Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $3.60



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"No building maintenance problems with Kaiser Aluminum roofing and siding"

says Mr. J. W. MacDonald, Vice-President Engineering,

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"FUMES AND GASES seem to have no effect on our corrugated aluminum coal-preparation plant. It is completely rust-proof and never needs painting or any other expensive upkeep.

"That's particularly important in the coal industry where building maintenance is often a major item of cost.

"We like the way that aluminum keeps the interior cool on hot summer days.

"In our opinion, aluminum is the ideal building material for coal-processing plants. A recent contract for another preparation plant will again require provision of corrugated industrial aluminum roofing and siding."

Not only does Kaiser Aluminum Industrial Roofing provide greater protection and lower maintenance . . . it also assures *immediate savings*. Its light weight reduces transportation and handling costs. And it often requires lighter, less expensive supporting structures.

Whatever you're building—figure first in Kaiser Aluminum—for better value at lower cost! For A.I.A. File and complete information, contact any Kaiser Aluminum sales office listed in your telephone directory. Or write Kaiser Aluminum & Chemical Sales, Inc. *General Sales Office*, Palmolive Bldg., Chicago 11, Illinois; *Executive Office*, Kaiser Bldg., Oakland 12, California.

Kaiser Aluminum

Industrial Roofing and Siding

Light Weight—Reduces transportation costs. So easy to handle that construction is faster, lower in cost. Often permits the use of lighter, less expensive framing.

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NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Me., Bangor**—SERVICE CLUB—BA 1/25—U. S. Eng., 857 Commonwealth Ave., Boston, service club Dow Air Force Base, ENG-19-016-56-89, $250,000-$300,000. Plans deposit $10, refundable. Wadsworth & Boston, 57 Exchange St., Portland, archts. CD 1/3.

† **Vt., Winooski**—SEWERAGE TREATMENT PLANT—BA 1/25—U. S. Eng., 857 Commonwealth Ave., Boston, Mass. sewerage treatment plant, Ethan Allen Air Force Base, ENG-19-016-56-87. $140,000. Plans deposit $10. Utility Engineers, Inc., 359 Boylston St., Boston, Mass., engr. CD 12/30.

BUILDINGS—BA

Mass., Jamaica Plain—HOME—BA 1/24—Home for Aged Men, 133 W. Springfield St., Boston, Home for Aged Men, 434 Jamaica Way. $620,000. Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, archts. CD 6/22.

▲ **Mass., Framingham**—SCHOOL—BA 2/9—Town, School Bldg. Comn., Union Ave., Brook-Water Elementary School, Saxonville-Central area. $1,037,000. Plans deposit $100, refundable. M. A. Dyer Co., 24 School St., Boston, archts.

Mass., Melrose—SCHOOL—BA 1/31—City, 585 Main St., Beebee School, $375,000. Valtz & Kimberly, Inc., 820 Lynn Falls Parkway, Melrose, archts. Former bids rejected. CD 9/14, under LB.

▲ **R. I., East Providence**—SHOPPING CENTER—Bids Asked—Syndicate, c/o Fred Podren, 143 Newbury St., Boston, Mass., 1 story bsmt., all brick shopping center, Taunton and Pawtucket Ave. $4,000,000. Sumner Schein, 271 Huntington Ave., Boston, Mass., archt. CD 9/15.

HEAVY CONSTRUCTION—LB & CA

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

Mass.—Massachusetts-Northern Constr. Corp., 588 Essex St., Lawrence, Mass. LB $181,043, est. $144,000, 4 bridges with approaches Mill Rd., Chapin Rd., Stafford Rd. over Scantic River and S. Monson Rd., over Temple Brook. Hampden, Hayden, Harding & Buchanan, Park Square Bldg., Boston, Mass., engrs.

Mass.—Joseph F. Austin, West St., Belchertown, Mass. LB $92,124, est. $90,000. 2 bridges, Fuller Rd. and Lombard Rd. over Higher Brook, Chicopee. Desmond & Lord, 6 Beacon St., Boston, Mass., engrs. Bids Jan. 4. CD 10/13.

▲† **Atlantic, Gulf & Pacific Co.**, 15 Park Row, New York, N. Y. CA $1,797,100, est. $1,000,000-$1,500,000. dredging Mystic River, Boston Harbor to Charlestown Bridge, CIVENG-19-06-56-31, MASSACHUSETTS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 12/8, under LB.

Parkman Constr. Co., Inc., 739 Boylston St., Boston, Mass. CA $73,943, est. $75,000. heating system, Mattapan (Dorchester), BOSTON, MASS. City, Hospital Dpt., 249 River St., Mattapan, Mass. J. M. McCusker Assoc., 17 Chestnut Ave., Jamaica Plain, engrs. CD 9/16/53.

Wes Julian Constr. Corp., 850 Providence Hy., Dedham, Mass. CA $550,651, est. $500,000. high level sewer (gravity) Aqueduct to Tremont St., NEWTON, MASS. City, City Hall, Newton, Mass. Bids Nov. 22. CD 11/14.

▲ **RHODE ISLAND**—State of R. I. & Providence Plantations, Div. Purchases, Joseph L. Byron, Purch. Agent, State House, Smith St., Providence.

M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., CA $3,989,776, est. $4,000,000, North-South Freeway over Providence River to Hayward Park Area, Bid No. 385, Providence. Bids Dec. 14. CD 12/16, under LB.

† **V. J. Paolino Constr. Co.**, 58 Tell St., Providence, R. I., LB Est. $80,000, repairs, imprvs. to roads, U. S. Naval Air Station, NOY 91904, Spec. 48738, QUONSET POINT, R. I. Officer in Charge of Constr., U. S. Naval Air Station, Quonset Point, R. I. Bids Dec. 22.

▲ **CONNECTICUT**—State Hy. Dpt., State Office Bldg., Hartford,

Conn.—M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., LB $8,187,839, est. $7,000,000 Proj. 320-01, 33,442 lin. ft. b. conc., incl. grade separation structures at Featherbed Lane, Branford Steam RR, Rte. 146, Quarry Rd., Moose Hill Rd., Rte. 1, Long Hill Rd., West River, Rte. 77, State St., Goose Lane, Tanner Marsh Rd., Branford and Guilford;

Conn.—Union Bldg. & Constr. Co., 631 Main Ave., Passaic, N. J., LB $6,513,616, est. $10,000,000. Proj. 319-01, 31,026 lin. ft. grading, drainage, pavement incl. 12 grade separation structures over water and bridge over N. Y. N. H. & H. R. R., c. conc. 16,586 lin. ft. and b. conc. 14,440 lin. ft. East Haven and Branford. Bids Jan. 9. CD 12/23.

N. Benvenuti & Sons, 16 Elm St., New London, Conn., CA, $903,000. sewage treatment plant addn., alterations, off Olcott St., MANCHESTER, CONN. Town, Richard Martin, genl. mgr., Manchester, Conn. Bids Nov. 8. CD 11/14, under LB.

BUILDINGS—LB & CA

▲ **Campanelli Bros., Inc.**, Nicholas Rd., Framingham, Mass. Separate Contracts. $4,000,000. 265 HOUSING DEVELOPMENT, Raymond Farms, BEVERLY, MASS.

▲ **Campanelli Bros., Inc.**, Nicholas Rd., Framingham, Mass. Separate Contracts. $1,210,000. HOUSING DEVELOPMENT, SHOPPING CENTER, Water St., Saxonville, FRAMINGHAM, MASS.

Grande & Sons, Inc., 175 Maplewood St., Malden, Mass. LB $464,142, est. $450,000-$500,000. replacement Washington SCHOOL, E. Weymouth Playground, East Weymouth, WEYMOUTH, MASS. Town, Supt. Schools, 89 Middle St., Weymouth, Mass. Bids Dec. 31. CD 12/14.

† **Ayers-Hagan-Boot, Inc.**, 35 Westminster St., Providence, R. I., CA $947,560, de-humidified WAREHOUSE, U. S. Naval Construction Battalion Center, NOY 89970, Spec. 47522, DAVISVILLE, R. I. Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston 10, Mass. Bids Dec. 15. CD 12/20, under LB.

▲† **John A. Volpe Constr. Co.**, 54 Eastern Ave., Malden, Mass., CA $1,129,647, est. $1,150,000. permanent BARRACKS for enlisted men, U. S. Naval Base, NOY 89976, Spec. 47525, NEWPORT, R. I. Dist P. Wks. Office, First Naval Dist., 495 Summer St., Boston 10, Mass. Bids Dec. 28. CD 1/3, under LB.

▲ **Martin Olson**, Summit Dr., Orange, Conn., CA $3,000,000, SHOPPING CENTER, Vauxhall St., NEW LONDON, CONN. East Haven Homes, Inc., 2697 Whitney Ave., Hamden, Conn.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

Pa., Phila.—BA 1/24—Dpt. Procurement, City Hall Annex, Bid 2542, Contr. 697, water mains, Chesworth Rd., etc. CD 3/11/46.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**
PROPOSED WORK	
Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
ENR	**Engineering News-Record**
CD	**Construction Daily**

For additional reports see Construction Daily.

Pa., Phila.—BA 1/26—City, Dpt. Procurement, City Hall Annex, curbing and footway work, (city to pay) curbing and footway work, (property owner to pay) grading, paving, repaving footways, constr. and resetting of curbs; repairs to footways and curbs (subway streets); repairing traffic safety islands; paving, repaving certain alleys and driveways. CD 10/30/44.

† **Maryland and Virginia**—BA On Or About 1/31—U. S. Eng., First and Douglas Sts. N. W. Wash. 25, D. C., maintenance dredging in Neale Sound, small tidal estuary located in Charles Co., Md. behind Cobb Island, 38 mi. upstream from Chesapeake Bay on left bank of Potomac River; dredging work in St. Patricks Creek small tidal estuary located in St. Marys Co., Md. which enters the west side of St. Clement Bay at its jct. with left bank of Potomac River 33 mi. upstream from Chesapeake Bay; dredging work in Island Creek small tidal estuary located in St. Marys Co., Md. in Lower part of St. Georges Island, which enters the right bank of St. Marys River at its jct. with left bank of Potomac River 11 mi. upstream from Chesapeake Bay, CIVENG-49-080-56-22. CD 9/1.

† **N. Y., Westnampton**—RECREATION BLDG., etc.—BA 1/31—U. S. Eng., 111 E. 16 St., New York, Zone 13, recreation bldg., gymnasium, Suffolk County Air Force Base. CD 1/6.

† **New York and New Jersey**—INTERCONNECTING CORRIDOR, etc.—BA On Or About 2/9—U. S. Eng., 111 E. 16 St., New York 3, N. Y., interconnecting corridor and engine generator and frequency changer bldgs. for Special AAA Facilities, Schedule II, sites at Morristown, Mountain View and Ramsey, N. J., and Orangeburg, N. Y.; Schedule IV, sites Grand Island, Cambria and Lewiston, N. Y., ENG-30-075-56-256. CD 2/18/55 under New York, CD 6/14/55 under New Jersey.

BUILDINGS—BA

N. J., Trenton—PLANT—BA 1/26—American Radiator & Standard Sanitary Corp., Klockner Rd., mfg plant addn. $93,000.

BUILDINGS—SLC

N. J., Point Pleasant—HEADQUARTERS, etc.—Jersey Central Power & Light Co., Grand Ave., Asbury Park, soon lets contract, district headquarters, storage, etc. $100,000. Bernard A. Kellenyi, Red Bank, archt.

HEAVY CONSTRUCTION—LB & CA

▲ **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York, N. Y. CA $9,794,810. channel imprvs., Sparrowhawk-Toussanits Channel near Ogdensburg, St. Lawrence Co., Spec. PA-5-11027, St. Lawrence Contr. No. 22, NEW YORK. Power Auth. of the State of New York, 270 Broadway, New York 7, N. Y. CD 12/21, under LB.

▲† **Arthur Venneri Co.**, 300 North Ave. E., Westfield, N. J. CA $1,740,713. air force facilities, addnl. bldgs., Plattsburgh Air Force Base, PLATTSBURGH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 12/8, under LB.

† **Ceravolo Constr. Co., Inc.**, RD No. 2, Rome, N. Y. CA $132,213. T/F Communication and Navigation Antenna Range, IFB 30-635-55-177, ROME, N. Y. Headquarters, Rome Air Force Depot, Griffis Air Force Base, Rome, N. Y. CD 10/19.

General Paving Co., N. Georgia Ave. and Thoroughfare St., Atlantic City, N. J., CA, $106,389, paving Atlantic Ave., VENTNOR, N. J. Atlantic City Transportation Co., Maine and Caspian Aves., Atlantic City, N. J. W. I. Risley, Guarantee Trust Bldg., Atlantic City, N. J., engr.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

American Bridge Div., United States Steel Corp., 1617 Pennsylvania Blvd., Phila. 3, Pa. LB $4,735,643. superstructure of main span of Fort Pitt Bridge exclusive of deck and sidewalk paving, 0.14 mi., in city of Pittsburgh, T.R.U.S. 22-30, L.R. 766-3C, Allegheny Co. Bids Jan. 6. CD 12/16.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

Pa.—John F. Casey Co., P. O. Box 1888, Pittsburgh 30, Pa. LB $5,597,419. rein.-con., substructure on eastbound parkway, substructure on westbound parkway, pavement at Ramps A, B, C, D, E, F, Grant St., Fort Pitt Blvd., New Street "A", ramps M and N; substructure and superstructure on Ramp B; grading, drainage on Baltimore & Ohio R.R. track, 1.23 mi., part of Penn-Lincoln Parkway in city of Pittsburgh, T.R. 764 (10), T.R. 22-30, Allegheny Co.;

Pa.—Dinardo, Inc., 331 Bouquet St., Pittsburgh 13, Pa. LB $426,205. rein.-con. 40 ft. wide 1.27 mi., in boro of Coraopolis, T.R. 51 westbound, Allegheny Co.;

Pa.—Fred W. Ewing, Inc., 405 W. Main St., Corry, Pa. LB $1,837,835. flexible base, bit. surf., 2 rein.-con. boxes, divided hy., five concrete rigid frame bridges, surf. 3 existing bridge decks with bit. surf. 4.72 mi., in city of Sharon and easterly, T.R. 62, Mercer Co.;

(Continued on page 86)

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(Continued from page 84)

Pa.—**Wagner Constr. Co.**, 115 S. Wyoming Ave., Kingston, Pa. LB **$1,092,759**. c. conc. 50 ft., 3 concrete boxes, bit. surf. 4.77 mi., Tunkhannock Boro, northwest to Russell Hill, T.R.U.S. 6-309, Wyoming Co. Bids Jan. 6. CD 12/16.

† **H. T. Osburn & Co., Inc.**, 631 12 St., Franklin, Pa. CA **$205,445**. first unit of Bradford Flood Protection Proj., Tunungwant Creek in McKean Co., Cattaraugus Co., CIVENG-36-058-56-7, PENNSYLVANIA. U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa. CD 8/18.

American Dredging Co., 12 S. 12 St., Phila., Pa. LB **$121,869**. dredging. Pier 2 area, Phila. Naval Base, NOY 92757, Spec. 50974, PHILA., PA. Dpt. Navy, Phila. Naval Base, Phila., Pa. Bids Dec. 28. CD 12/15.

† **Clute Brothers**, Box 96, Wyoming, Del., LB, **$88,450**, officers club bldg. addn., etc. Dover Air Force Base, ENG-36-109-56-38, DOVER, DEL. U. S. Eng., 2635 Abbottsford Rd. Phila., Pa. CD 9/6.

Di Sabatino Brothers, 2550 W. 5 St., Wilmington, Del., LB, **$86,119**. sanitary sewers, Hyde Park Section, WILMINGTON, DEL. New Castle County Levy Court, Public Bldg., Wilmington, Del. CD 11/10.

BUILDINGS—LB & CA

▲ **Fairfield Constr. Co.**, 405 State St., Hackensack, N. J. CA Est. **$1,500,000**. SHOPPING CENTER, 4-acre tract at Manor Rd. and Victory Blvd., CASTLETON CORNERS, N. Y. Park Fairway Corp., c/o A. H. Salkowitz, archt., 37-60 82 St., Jackson Heights, N. Y. CD 7/25.

▲ **Irons & Reynolds, Inc.**, 420 Lexington Ave., New York 17, N. Y. CA Est. **$2,400,000**. SCHOOL and RECTORY, NEW YORK, N. Y. St. Nicholas of Tolentine, Fordham Rd. and University Ave., New York, N. Y. CD 3/7.

Arlyn Oaks Homes, c/o Frank E. Wright & Sons, 56 Hempstead Turnpike, West Hempstead, N. Y. Owner Builds **$350,000**. 25 HOUSES, Broadway, near Southern State Parkway, NORTH MASSAPEQUA, N. Y.

▲ **Tandy & Allen Constr. Co., Inc.**, 280 Hackensack Ave., Hackensack, N. J. LB **$1,297,000**. general constr. GERIATRIC BLDG., Middletown State Homeopathic Hospital, MIDDLETOWN, N. Y. Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Jan. 5. CD 12/7.

▲† **Grove, Shepherd, Wilson & Kruge, Inc.**, 400 Madison Ave., New York 17, N. Y. CA **$9,040,838**. conversion of riding hall to ACADEMIC BLDG., U. S. Military Academy, WEST POINT, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 12/5, under LB.

▲ **John A. Jonnson & Sons, Inc.**, 303 41 St., Brooklyn 32, N. Y. CA **$3,582,000**. general constr. completion of Southeast Yonkers Junior-Senior High SCHOOL, Keeland Ave., YONKERS, N. Y. Bd. Educ., 138 S. Broadway, Yonkers, N. Y. LaPierre, Litchfield & Partners, (formerly Alfred Hopkins & Assocs.), 292 Madison Ave., New York 17, N. Y., archts. Grand total $4,396,130;
Michael Harmonay Corp., 567 Yonkers Ave., Yonkers, N. Y. CA **$388,210**. heating and ventilating work, (Yonkers, N. Y.);
Herbert G. Martin, Inc. & ARC Electrical Constr. Co., Inc., 77 Hawthorne Ave., Yonkers, N. Y. CA **$425,920**. electric work, (Yonkers, N. Y.).

Minkoff Brothers, Blackwood, N. J., Separate Contracts, **$344,000**. RESIDENTIAL DEVELOPMENT, various locations, BLACKWOOD, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J. archt.

Erma Oaks, Inc., 423 W. Olney Ave., Phila., Pa., Separate Contracts, **$350,000**. RESIDENTIAL DEVELOPMENT, CAPE MAY, N. J. Dante D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲† **Paul Tishman Co., Inc.**, 21 E. 70 St., New York, N. Y., LB, **$3,155,381**. permanent family HOUSING, site improvs., utilities, ENG-36-109-56-39, FORT DIX, N. J. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Dec. 22. CD 12/12.

▲ **Margate Manor, Inc.**, c/o Edward Gottlieb, Schwehm Bldg., Atlantic City, N. J., Separate Contracts, **$3,000,000**, 160-unit RESIDENTIAL DEVELOPMENT, Wellington Ave. etc., MARGATE, N. J.

▲ **Collins Realty Co.**, City Line and Belmont Ave., Bala Cynwyd, Pa. Separate Contracts, **$2,000,000**. RESIDENTIAL DEVELOPMENT, Washington Twp., Bell's Lake Area, MOUNT HOLLY, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

George H. Evans Co., 1914 Spring Garden St., Phila., Pa., CA **$372,410**. HOSPITAL WING, SALEM, N. J. Salem County Memorial Hospital, Salem, N. J.

Louis H. Cahan & Co., 149 W. 8 St., Trenton, N. J., CA, **$800,000**, BUILDING for lease as U. S. Post Office, TRENTON, N. J. Trenton Realty Co., 140 W. State St., Trenton, N. J.

Scullin Homes, Inc., 103 Althea Ave., Yardville Heights, N. J., Separate Contracts, **$344,000**. RESIDENTIAL DEVELOPMENT, Hamilton Twp., Mae Dr., etc., TRENTON, N. J.

Wynnewood Constr. Corp., 431 Haverford Rd., Wynnewood, Pa. Separate Contracts. **$825,000**. RESIDENTIAL DEVELOPMENT, 75 units, General Warren Village, MALVERN, PA.

James T. Delany, 1720 N. 24 St., Phila., Pa. Separate Contracts. **$344,000**. RESIDENTIAL DEVELOPMENT, Gwynedd Twp., McKean Rd., SPRING HOUSE, PA.

Gwynedd Gardens, Inc., 1419 Surrey Lane, Phila., Pa. Separate Contracts. **$344,000**. RESIDENTIAL DEVELOPMENT, Hamilton Rd., SPRING HOUSE, PA.

Aldon Constr. Co., Woodward Bldg., Wash., D. C., Owner Builds. **$675,000**. 27 brick detached HOMES, Jamestown Rd., BETHESDA, MD. Edmund W. Dreyfuss, 1019 15 St., Wash., D. C., archt.

Keil's Inc., 11 and Tatnall Sts., Wilmington, Del., Separate Contracts, **$125,000**. AUTO SALES and SERVICE, WILMINGTON, DEL. Samuel Abramson, 2201 Chestnut St., Phila., Pa., archt.

SOUTH

HEAVY CONSTRUCTION—BA

† **Virginia**—BA About 1/31—U. S. Eng., 1st and Douglas Sts. N. W. Wash., D. C., dredging Whitings Creek, Middlesex Co.; Urbanna Creek, Middlesex Co.; Totuskey Creek, Richmond Co. CD 9/1.

† **Ga., Brunswick**—FUEL STORAGE FACILITIES—BA 1/31— P. Wks. Officer, Dpt. Navy, Naval Base, S. C., addnl. fuel storage facilities, U. S. Naval Air station, NOY 92495. Plans deposit $20.

Ky., Louisville—BA 2/7—Louisville Water Co., S. Third St., Contr. D, design, fabrication, erection 1 m.g. double ellipsoidal elevated steel water tank, $50,000. CD 8/9.

† **S. C., Beaufort**—HOUSING—BA 2/7—Dist. P. Wks. Office, Sixth Naval Dist., Bldg. No. 12, U. S. Naval Base, Charleston, FY-56 military family housing, Marine Corps Auxiliary Landing Field, NOY 91081, Spec. 49054. Plans deposit $40 CD 6/30.

Ky., Bowling Green—BA 2/14—Water-Sewer Plant Comm., 1011 College St., reservoir foundation, steel reservoir, appurtenances, filter plant addn., electrical work, filter exten., clarifier, water lines. Plans deposit $25 refundable, The Chester Eng. Co., 210 E. Parkway N. Side, Pittsburgh, Pa., engr. CD 9/2.

▲† **Kentucky**—BA 2/16—U. S. Eng., P. O. Box 59, Louisville, Zone 1, constr. locks, Markland Locks and Dam, Ohio River, CIVENG-15-029-56-38. CD 12/27.

BUILDINGS—BA

Ky., Ford—BUILDING—BA 1/23—East Kentucky Rural Electric Co-operative Corp., Winchester, superstructure 104x230 ft. brick bldg. Unit No. 3, $100,000. Plans deposit $25, refundable, Burns & McDonell Eng. Co., Box 7088, Kansas City, Mo., engr. CD 9/15.

Virginia—OFFICE—BA 1/25—Commonwealth of Va., Dpt. Hys., Central Hy. Office Bldg., 1221 E. Broad St., Richmond, district office bldg. alterations, addns., north of Petersburg, Chesterfield Co. Plans deposit $5.

Tenn., Nashville—GLASS PLANT—Bids Asked—Ford Motor Co., J. A. MacAlarney, Dir. Plant Engrg. Office, P.O. Box 117, Dearborn, Mich., superstructure for glass plant. CD 7/20.

HEAVY CONSTRUCTION—LB & CA

† **Nello L. Teer Co.**, P.O. Box 1131, Durham, N. C. CA **$45,988**. dredging Quinby Creek, dredging channel and turning basin to 8 ft. with 1 ft. allowable overdepth, Accomack Co., CIVENG-44-110-56-10, VIRGINIA. U. S. Eng., P.O. Box 119, Norfolk 1, Va.

NORTH CAROLINA—State Hy. & P. Wks. Comm., Releigh,
W. E. Graham & Sons, Box 268, Cleveland, N. C., CA **$507,864**, est. $400,000-$500,000. roadway 12.46 mi. US 23 (relocation), Proj. 9622, Macon Co. Bids Nov. 29, awarded Jan. 4. CD 12/2, under LB.

† **Chitwood House Moving Co.**, 1908 Two Notch Rd., Columbia, S. C., CA **$259,400**, relocation and rehabilitation of T-1 Ready Hangar, Seymour Johnson Air Force Base, ENG-31-075-56-13, GOLDSBORO, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Nov. 30. CD 10/26.

▲† **Ballenger Paving Co.**, P.O. Box 927, Greenville, S. C., CA **$1,015,468**, apron and taxiway Turner Air Force Base, ENG-09-133-56-22, ALBANY, GA. U. S. Eng., 200 East St. Julian St., Savannah, Ga. Bids Dec. 4. CD 10/31.

▲† **Standard Dredging Corp.**, 1326 Holmesdale Rd., Jacksonville, Fla., CA **$3,039,108**, widening, deepening Tampa Bay Harbor, ENG-08-123-56-24, FLORIDA, U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Dec. 15, awarded Dec. 30. CD 12/27, under LB.

▲† **Paul Smith Constr. Co.**, Box 2866, Orlando, Fla., CA, **$4,086,955**. facilities, AF contract 33(600)28619, Air Force Missile Test Center, CAPE CANAVERAL, FLA. Convair-A Division of General Dynamics Corp., 3302 Pacific Hy., San Diego, Calif. Bids Dec. 1. CD 10/25

▲† **Hilbert Sapp, Inc.**, P. O. Box 2053, Orlando, Fla., CA **$3,040,558**, Assembly Bldgs. K, L, and M, central heating plant, 4 operational equipment storage bldgs., Cape Canaveral AAFB, AFMTC, Patrick Air Force Base, ENG-08-123-56-1, COCOA, FLA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. CD 5/24/49.

† **Joseph G. Moretti, Inc.**, 2401 N. W. 7 St., Miami Fla., CA, **$922,057**, hydrant fueling, Homestead Air Force Base, ENG-08-123-56-30, HOMESTEAD, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Dec. 16, awarded Dec. 28.

Sheffield Steel Products, Inc., 1353 N. W. 57 St., Miami, Fla., CA, **$708,540**, fabrication and erection structural steel, 20th St. Terminal Bldg., Miami International Airport, MIAMI, FLA. Comrs. Dade Co. Port Authority, Court House, Miami, Fla. Bids Dec. 27, awarded Jan. 3. CD 1/5, under LB.

Richards Constructors, Inc., Niceville, Fla., CA, **$222,831**, Section III, sewage lift station, OCALA, FLA. City, City Hall, Ocala, Fla. Bids Nov. 29. CD 12/2, under LB.

▲† **Southern Roadbuilders, Inc.**, 540 Reynolds St., Box 1129, Augusta, Ga., CA, **$1,278,266**. runway exten., lighting facilities, MacDill Air Force Base, ENG-08-123-56-38, TAMPA, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Dec. 21, awarded Dec. 30. CD 12/29, under LB.

BUILDINGS—LB & CA

▲ **Daniel Constr. Co.**, 429 N. Main St., Greenville, S. C., CA, **$1,081,428**, LIBRARY, GREENVILLE, S. C. Furman University, Greenville, S. C. CD 10/7/52.

Leo Gelvan, 7033 N. W. 36 Ave., Miami, Fla., CA, **$420,000**, 1 and 2 story, 210x400 ft., mfg. PLANT and OFFICES, 33 St. and 11 Ave., HIALEAH, FLA. National Container Corp., 2700 Talleyrand Ave., Jacksonville, Fla. R. J. Schneider, 1431 Flamingo Way, Hialeah, Fla., archt.

▲ **Louisville Gas & Electric Co.**, 311 W. Chestnut St., Louisville, Ky. Owner Builds. **$17,500,000**. 3rd electrical generating unit at Cane Run Plant capacity 125,000 kilowatts steam powered, LOUISVILLE, KY.

Al J. Schnieder Co., 3720 Seventh St. Rd., Louisville, Ky. CA **$598,600**. Clarence A. Bubado Elementary SCHOOL, LOUISVILLE, KY. Bd. Educ., Fifth and Hill Sts., Louisville, Ky. Bids Dec. 27, awarded Jan. 3. CD 1/6, under LB.

▲ **John Walser**, 4050 Westport Rd., St. Matthews, Ky. Owner Builds. **$2,940,000**. one hundred and fifty-two 1 and 2 story RESIDENCES, Walser Subdivision Alicent Rd., LOUISVILLE, KY.

Ben Ubank Lumber Co., 611 E. Third St., Lexington, Ky. CA **$201,175**. 1 story, brick HEADQUARTERS BLDG., WAREHOUSE, GARAGE, WINCHESTER, KY. East Kentucky Rural Electric Co-operative Corp., Winchester, Ky. Bids Dec. 20, awarded Dec. 30. CD 12/1.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

Ill., Tinley Park—BA 1/24—State Div. Architecture & Eng., Armory-Office Bldg., Springfield, incinerator plant, Tinley Park State Hospital. CD 3/23, under Public Buildings.

Ill., Tinley Park—ELECTRICAL DISTRIBUTION SYS.—BA 1/24—State Div. Architecture & Eng., Armory-Office Bldg., Springfield, electrical underground distr. sys., semi-infirm bldg., Tinley Park State Hospital. CD 3/24, under Public Buildings.

† **Indiana and Illinois**—BUILDINGS, etc.—Ba On Or About 1/31—U. S. Eng., 473 Merchandise Mart, Chicago 54, Ill., misc. buildings, structures, etc. Special AAA Sites in Lake County, Indiana, and Cook, DuPage and Lake Counties, Illinois, Serial No. ENG-11-032-56-35.

† **Illinois**—BA 2/3—U. S. Eng., 420 Locust St., St. Louis 2, Mo., Granite City Engineer Depot Lift Station, East St. Louis and Vicinity (East Side Levee & Sanitary Dist.) Proj.: Item I-A (1) (Phase 2), Madison and St. Clair Counties, Inv. CIVENG-23-065-56-53.

BUILDINGS—BA

O., Church Hill—SCHOOL—BA 1/26—Liberty Twp. Bd. Educ., Church Hill, Liberty Elementary School addn. $563,000. Plans deposit $25. Kilng & Frost, 661 Wick Ave., Youngstown, archts.

† **Wis., Camp Douglas**—BUILDING—BA 1/31—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., rehabilitation of Building 318 to Wing Headquarters, for Air National Guard Facilities at Camp Williams, ENG-11-032-56-41.

▲ **O., Cincinnati**—SHOPPING CENTER—BA 2/1—Walters Bros., 7911 Reading Rd., (selected list of bidders), shopping center, Winton Rd. and Hemstead Dr. $2,000,000. Cordes, Pressler, Houck & Assocs., 4939 Paddock St., Cincinnati, archts. Beineke & Reuhlmann, 626 Broadway, engrs. CD 11/10.

Mich., Dearborn—SCHOOL—BA 2/8—City, Jessie Schneidewind, secy, School Dist., 5757 Neckel Ave., high school. Plans deposit $75 refundable, Eberle M. Smith Assoc., Inc., 153 E. Elizabeth St., Detroit, Zone 1, archt. CD 2/24/54.

Ill., Geneva—CHURCH—Bids Asked—Fox Valley Presbyterian Church, 312 Elm St., Batavia, church. $370,000. Wm. Cooley, 532 Busse Rd., Park Ridge, archt.

O., Toledo—LABORATORY, etc.—Bids Asked—Sun Oil Co., 1608 Walnut St., Phila., Pa. (selected list of bidders) laboratory bldg., medical dispensary bldg., guard gate bldg. $500,000. CD 11/17.

BUILDINGS—SLC

Ill., Chicago—WAREHOUSE—Better Brands of Illinois, Inc., 315 N. May St., soon lets contract 30,000 sq. ft. warehouse, $450,000. D. M. Dorr, 57 E. Walton St., Zone 11, archt.

HEAVY CONSTRUCTION—LB & CA

Gatlin Plumbing & Heating Co., 311 Broad St., Griffith, Ind., LB **$196,899**. 8 mi. water mains GRIFFITH, IND. Town, Town Hall, Griffith, Ind. Clyde E. Williams, 312 W. Colfax St., South Bend, Ind., engrs.;
Chicago Bridge & Iron Co., 332 S. Michigan St., Chicago 4, Ill., LB, **$110,000**. 200,000 gal. elevated steel storage tank, repairing existing tank, (Griffith, Ind.);
Miller Brothers, 420 Broad St., Griffith, Ind. LB **$82,910**. pumping station, (Griffith, Ind.).

▲ **WISCONSIN**—State Hy. Comm., State Office Bldg., Madison,
Wis.—**The Kramp Constr. Co., Inc.**, 2775 S. 27 St., Milwaukee 15, Wis., CA **$833,758**, Contract 2, base c. conc. 5.309 mi. S.T. Hy. 36, Proj F-064-1 (5), Milwaukee Co.;

(Continued on page 88)

Replace 4 trucks and one loader with one 7-yd. Tournapull

Rig "puts profits into ditching," reports contractor

For cutting ditches and building shoulders along newly blacktopped roads, State Contracting & Stone Co., Hartford, Kentucky, reports excellent results with their team of a D Tournapull and one or more graders. The "D" has replaced a loader and a fleet of 4 to 5 trucks formerly used for this type of work. The self-loading Tournapull picks up the grader dirt. The team averages a mile of ditch and shoulder daily. Here's the way the system works:

"D" never damages pavement

First, the grader cuts the ditch to required shape. Material is cast onto the shoulder and along the edge of the road. Tournapull then self-loads this piled dirt, carrying up to 5 yards.

A straight finishing-blade which can be "floated" allows operator to load off the new blacktop without damaging it. Material is hauled over the highway to fill low spots along the shoulder. Where additional material is needed to fill pockets, "D" cuts down high spots along the right-of-way. When fill is completed, the grader returns to clean any excess material left by the scraper off the blacktop.

Ditches 12 mi. in 108 hrs.

This normally finishes the job, though, on occasion, when enough extra dirt for filling isn't available along the right-of-way, State Contracting Co. arranges to build a stockpond or two for nearby farmers in exchange for the dirt. On one such job, the "D" did 12 miles of ditching *and* excavated a large artificial lake — all in 108 hours. As soon as this work was done, Tournapull traveled 100 miles under its own power. Stopped once for regular 100-hour oil change, and began another ditching job, all in the same day.

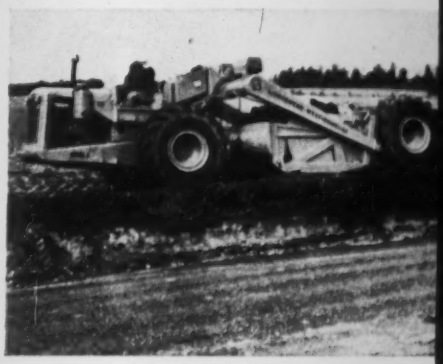
Handles jobs 15 mi. apart

Robert Hudson, president of the firm, is "more than satisfied" with Tournapull speed and versatility. He says, "I like the efficiency of the 'D'-plus-grader operation. You can put graders on 2 jobs 15 miles apart, and the 'D' will easily handle cut and fill work for both of them. It moves quickly and easily between jobs. It has made ditching a profitable item. We still submit the same bids, but now we make money because the 'D' does the work so cheaply . . . ditching is no longer just a sideline and break-even proposition."

Boost your profits

We think the LeTourneau-Westinghouse D Tournapull can make money for you, too. Why not let us prove it? Ask for an on-your-job demonstration. We think you'll find the 138 hp, 7-yd., 28 mph "D" ideal for a part or all of your work.

D 'Pull spreads load of red clay to build up shoulder. Low-pressure tires do no damage to newly-set blacktop or soft shoulders.



When additional material is needed to build up shoulder, D Tournapull self-loads about 5 pay yds. from along the right-of-way.

"D" is narrow enough and light enough to drive over nearly any road or across any bridge. Top speed is slightly over 28 mph. Says Operator Tommy Collins, "This rig sure gets around well." Says Foreman Jim Mitchell, "The 'D' handles very easily. All around, it's really handy on the job."

Tournapull—Trademark Reg. U.S. Pat. Off. DP-794-P-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

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See Page No. 13

(Continued from page 86)

Wis.—Streu Constr. Co., 2004 14 St., Two Rivers, Wis., CA $674,200. Contract 1, base, c. conc. 4.603 mi. U. S. Hy. 16, Proj F-660 (4) and F 06-2 (13), Jefferson Co.; CA $626,483, Contract 2 and 1, base, c. conc., single aggreg. bit. 4.993 mi. Proj. F 06-2 (13) and T 0446 (2) Jefferson Co. Grand total $2,134,441. Bids Dec. 20. CD 12/28, under LB.

▲ MICHIGAN—State Hy. Dpt., Stevens T. Mason Bldg., Lansing, Mich.—Charles J. Rogers, Inc., 14836 Grand River, Detroit, Mich. and Cooke Contg. Co., 1116 Penobscot Bldg., Detroit, Mich. CA $1,736,626, est. $2,000,000. dual 36 ft. c. conc. 0.914 mi., ramps, service road, utilities, signals on Edsel Ford Expressway, UI 82-67 C16 (UI 09-1 1), Wayne Co.;

Mich.—L. A. Davidson, 213 E. Joseph St., Lansing, Mich. CA $797,260, est. $840,000. four lane concrete, b. conc. 3.072 mi., M-23, SS 23-37 C3 (S 36 9), Eaton Co.

Steinle Wolfe, Inc., Fremont, O. LB $294,250. swimming pool addn., Derby Junior High School, BIRMINGHAM, MICH. City, Amos F. Gregory, secy., School Dist., Birmingham, Mich. Bids Dec. 13. CD 11/29.

BUILDINGS—LB & CA

▲ Heller-Murray Co., 222 W. Rayen St., Youngstown, O. CA Est. $1,900,000. RESEARCH LABORATORY and CAFETERIA-RECREATION BLDG., BARBERTON, O. Columbia-Southern Chemical Corp., 95 Columbia Ct., Barberton, O.

▲ Ferro Concrete Constr. Co., 203 W. 3 St., Cincinnati, O., CA Est. $1,750,000. 175,000 sq. ft. addn., expansion of MANUFACTURING, ADMINISTRATION and RESEARCH BLDG., Spring Grove Ave. and June St., adjacent to Ivorydale Factory, CINCINNATI, O. The Procter & Gamble Co., Gwynne Bldg., Cincinnati, O. Voorhees, Walker, Smith & Smith, 101 Park Ave., New York, N. Y., archts.

Charles V. Maescher & Co., 2106 Florence St., Cincinnati, O. CA $600,000, PLANT addns., 2 and 3 story, 42x76 ft. wing, and 1 and 2 story, 76x350 ft. wing, CINCINNATI, O. Interchemical Corp., 4700 Paddock Rd., Cincinnati, O. Hake & Hake, 2400 Gilbert Ave., Cincinnati, O., archts.-engrs.

▲ Frank K. Brown, 285 Yearling Rd., Columbus, O. CA Est. $2,250,000. 125 DWELLINGS to be known as Mayflower Homes in suburb of Whitehall at E. Broad St. and Yearling Rd., COLUMBUS, O. Don M. Casto & Son., 42 S. 4 St., Columbus, O.

▲ Wm. R. Goss Co., 3816 S. Ellis St., Chicago, Ill., CA, $1,500,000, HIGH SCHOOL, 3801 W. 99 St., Awarded Dec. 21, Fox & Fox, 30 N. La Salle St., Chicago, archts.; CA $500,000. SCHOOL, 1337 W. Ohio St., Awarded Dec. 23, Joseph W. Gabnuolo, 30 E. Wacker Rr., Chicago, archt., CHICAGO, ILL., Catholic Bishop of Chicago, 719 N. Wabash St., Chicago, Ill.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

† Mo., Weldon Springs—TANK FARM—BA 1/25—Fruin-Colnon Contg. Co. & Utah Constr. Co., joint venturers, St. Louis Area Proj. (Contr. AT-40-1) 1966, P.O. Box 522, St. Charles, green salt tank farm area 201 (sub-contract WS 27) for Atomic Energy Comn. CD 12/29/54, under CA, public buildings.

† Oklahoma—BA 1/30—Soil Conservation Service, Stillwater, (OK-15-56) floodwater retarding structures with earthfill embankments, Sites 3, 9 and 10 on Owl Creek, Washita River Watershed, approx. 5 mi. east and 9 mi. south of Purcell, McClain Co.

† Mont., Glasgow—BUILDINGS—BA 2/15—U. S. Eng., City-County Airport, Walla Walla, Wash., 37 rein.-con. masonry, steel bldgs., 2 igloos, utilities, development of sites and other facilities, Air Force Base, ENG-45-164-56-7. Plans deposit $100. CD 1/6, under LB.

† Minnesota—SUBSTATION—BA 2/16—Bureau Reclamation Dpt. Interior, Huron, Granite Falls Substation, Missouri River Basin Proj., S. D., location in Granite Falls, adv. ENR 1/19.

† Nebraska—BA 2/21—Bureau Reclamation, Dpt. Interior, McCook, earthwork and structures for Upper Meeker Canal Station 0 plus 75 to Station 567 plus 00, road relocations and drains, near Trenton, Missouri River Basin Proj., Spec. DC 4604, adv. ENR 1/19. CD 5/25/44.

BUILDINGS—BA

† Mo., Weldo Springs—MAGNESIUM—BA 1/31—Fruin-Colnon Contg. Co. & Utah Constr., joint venturers, St. Louis Area Proj. Contr. AT-(401-1) 1966, P. O. Box 522, St. Charles, magnesium bldg. (Subcontract WS 31) for Atomic Energy Comn. CD 12/29/54, under CA.

▲ Tex., Houston—HOSPITAL, etc.—BA 2/7—Memorial Hospital, 602 Lamar St., 13 story, bsmnt. Memorial Hospital and Professional Bldg. $3,300,000; 500-auto parking garage, $500,000. Wirtz, Calhoun, Tungate & Jackson, 2506 Richton St., archts. Joe A. Poole & R. L. Reid, 2506 Richton St., engrs. CD 5/31.

▲ Tex., Houston—MILL—BA 2/15—Ideal Cement Co., Gulf Div., San Jacinto Bldg., Houston, and c/o Denver Natl. Bldg., Denver, Colo., Proj. 396, cement mfg. mill. $1,000,000-$4,000,000. George Wiley, Denver Natl. Bldg., Denver, Colo., owners gen. engr. CD 6/6.

HEAVY CONSTRUCTION—LB & CA

† Dakota Asphalt Sales Corp., 3204 S. Walts St., Sioux Falls, S. D., CA $84,950. parking stands and

(Continued on page 90)

Easy to handle fingertip controls are easy to learn and operate. After handling Tournatractor for only 30 hours, a previously unskilled native operator was doing a good job of final grading.

Rubber-tired tractor speeds street construction *in old Baghdad*

Progressive dirtmoving contractors all over the world are taking advantage of the ease of maintenance and operation, speed and high rate of production offered by the versatile Tournatractor. For example, here's how one earthmover, in ancient Baghdad, Iraq, uses its rubber-tired tractor to speed production.

Baghdad today is a city of great contrast. On one hand, you see ultra-modern apartment houses, gas stations, and soft-drink stands. On the other, are ancient mosques and mud houses. Modern buses and automobiles mingle with throngs of camels and donkeys. Construction goes on everywhere. Even ancient narrow stone streets are giving way to broad, blacktop avenues.

A typical road-modernization project was recently handled in the Adhamia Subdivision of Baghdad by United Contracting Co. Their rubber-tired Tournatractor has proved invaluable for building subgrades before final bituminous paving. It maneuvers easily in the narrow streets. Big low-pressure tires absorb shocks when traveling on rough stone and earth roads — yet roll over newly-laid pavement and curbing without causing damage. 19 mph speeds permit fast travel between assignments . . . enable Tournatractor to shuttle back and forth and handle dozing assignments on two or more scattered projects at the same time.

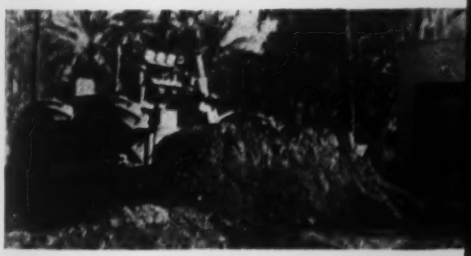
More work, lower cost

Tournatractor has reduced contractor's equipment inventory and payroll, too! United Contracting Co. officials estimate it would have taken at least four 45 hp crawler-tractors and one or two motor-graders to handle the work done by this single 186 hp (new machines 208 hp) tractor-on-rubber. This is partly due to the superior working speeds and mobility of the rubber-tired unit; partly to the large amounts of material it handles on every pass; partly to the effective compaction of the rocky subgrades by its big 2-ft. wide low-pressure tires.

United is finding many uses for this versatile machine. With their recent purchase of a double-drum power-control unit, this high-speed tractor can be used to operate a scraper or rooter, in addition to dozing and pushing. This enables the company to accept contracts for larger, more varied jobs that formerly had to be refused or subcontracted.

Ask for more information

If you are interested in speed and versatility for your work, contact your LeTourneau-Westinghouse Distributor. He will be glad to give you complete information on these modern, rubber-tired tractors.



Tournatractor dozes capacity 2½-yard loads of loam, gravel, gumbo, and rock. Push distances range from 100' to 1000' depending on cut and fill required. Here material is pushed to both sides of the street to build up foundations for sidewalks. Low-pressure tires do not cut into finished grades even after heavy rain.

Tournatractor—Trademark Reg. U.S. Pat. Off. T-981-G-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

(Continued from page 88)

parking lots, Sioux City Air Force Base, SIOUX CITY, IOWA. Contg. Officer, Sioux City Air Force Base, Sioux City, Iowa. Bids Dec. 22. CD 12/15.

▲ **Stone & Webster Engineering Co.**, 49 Federal St., Boston, Mass. CA Est. **$2,000,000**. 138,000 volt transmission line from Rivermines sub-station to Cape Girardeau to connect with Missouri Utilities Co. system, MISSOURI. Union Electric Co. of Missouri, 315 N. 12 Blvd., St. Louis 1, Mo. CD 8/1.

Earl F. Brosnahan, Union Station Bldg., Kansas City, Mo. CA **$197,158**. water main point near 65 and Cherry Sts. to point near 76 and Paseo Sts., KANSAS CITY, MO. City, City Hall, Kansas City, Mo. Burns & McDonnell Eng. Co., 95 and Toost Sts., Kansas City, Mo., engr. Bids Dec. 29. CD 8/6/54.

Continental Constr. Co., 12512 E. 34 St., Independence, Mo. CA **$48,585**. WW sys., treatment plant, distr. sys., UNION STAR, MO. City, Union Star, Mo. Bids Dec. 12. CD 11/14.

† **American Liquid Gas Corp.**, 1109 Santa Fe Ave., Los Angeles, Calif. CA **$78,149**. propane and butane gas storage facilities (Sub-contract No. WS 23) for Atomic Energy Comn., WELDON SPRINGS, MO. Fruin-Colnon Contg. Co. & Utah Constr. Co., joint venturers, St. Louis Area Proj. Contr. AT (40-1) 1956, P. O. Box 522, St. Charles, Mo. Bids Dec. 8. CD 12/29/54, under CA, Public Buildings.

† **U. S. Eng.**, P. O. Box 867, Little Rock, Ark., cancelled bids to have been opened Dec. 29, special weapons training bldg., Blytheville Air Force Base, ENG-03-050-56-50, BLYTHEVILLE, ARK. CD 1/8.

† **The Darby Products Corp.**, 1st and Walker Sts., Kansas City, Kan., CA **$87,858**, roads, utilities, Minot Air Force Base, Inv. 25-066-56-17, MINOT, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Oct. 26. CD 11/7, under LB.

KANSAS—State Hy. Comn., Salina,

E. W. Geiger, Inc., P. O. Box 799, Topeka, Kan. CA **$115,946**. (3 bidders) Bridge 14-45-25.9, Sta. 442 plus 95, 64 ft., three 80 ft., 64 ft., steel beam, Proj. 14-45 K 2112 (2), Jewell Co. Bids Dec. 8. CD 11/28, under Streets and Roads.

Asplund Constr. Co., 324½ E. Walnut St., Enid, Okla. CA **$158,382**. sewage treatment plant, 800 lin. ft. 8 and 15 in. vitr. clay pipe, 466 lin. ft. 4-to 14-in. c. i. pipe, MEDICINE LODGE, KAN. City, Alma Jarnagin, city clk., Medicine Lodge, Kan. CD 12/14

Vaughn & Taylor, c/o owners, CA **$685,000**, laying 120 mi. 20- to 30-in. gathering lines in Garvin, Grady and McClain Counties, OKLAHOMA. Phillips Petroleum Co., 1708 Utica Square, Tulsa, Okla.

† **L. M. Jones Co.**, P. O. Box 2526, Oklahoma City 8, Okla. LB **$143,438**, storage/base arm magazine ammunition shop, Clinton Sherman Air Force Base, NOY 88925, Spec. 47841, CLINTON, OKLA. Officer In Charge of Constr. Eighth Naval Dist., Bldg. 16, U. S. Naval Station, New Orleans (Algiers), La. Bids Dec. 28. CD 12/13.

Metropolitan Paving Co., 300 S. Indiana St., Oklahoma City, Okla., LB **$83,883**, est. $84,243, asphalt pavement. Dist. 1276, OKLAHOMA CITY, OKLA. City, City Hall, Oklahoma City, Okla. W. W. Baker, City Hall, Oklahoma City, city engr. CD 7/27.

Texas Pipe Line Co., Diboll, Tex. Own Forces. **$265,000**, reconstr. 12 in. crude oil pump station, Diboll Area, Angelina Co., TEXAS. CD 12/8.

† **Pittsburgh-Des Moines Steel Co.**, Neville Island, Pittsburgh, Pa., LB **$72,384**, est. $73,717, 300,000 gal. elevated water storage tank, Bryan Air Force Base, ENG-41-443-56-53, BRYAN, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids Jan. 4. CD 12/13.

North Texas Development Co., 4515 Prentice St., Dallas, Tex. Own Forces. **$75,000**, storm sewers; **$75,000**, sanitary sewers at Pleasant Grove, DALLAS, TEX. CD 12/5.

North Texas Development Co., 4515 Prentice St., Dallas, Tex. Own Forces. **$50,000**, c. i. water lines, facilities at Pleasant Grove, DALLAS, TEX.

North Texas Development Co., 4515 Prentice St., Dallas, Tex. Own Forces. **$75,000**, asphalt paved streets curb and gutter at Pleasant Grove, DALLAS, TEX.

North Texas Development Co., 4515 Prentice St., Dallas, Tex. Own Forces. **$47,000**, earthwork, grading for bldg. site area at Pleasant Grove, DALLAS, TEX.

Bailey-Evans Co., 4137 Reed Rd., Houston, Tex. Own Forces. **$95,500**, sanitary-storm sewers, HOUSTON, TEX.

Bailey-Evans Co., 4137 Reed Rd., Houston, Tex. Own Forces. **$46,650**, c. i. water lines, facilities, HOUSTON, TEX.

Bailey-Evans Co., 4137 Reed Rd., Houston, Tex. Own Forces. **$76,750**, asphalt paved streets, curb and gutter, HOUSTON, TEX.

Bailey-Evans Co., 4137 Reed Rd., Houston, Tex. Own Forces. **$46,000**, bldg. site area earthwork, grading, HOUSTON, TEX.

C. O. Beeler, Interests, 4715 Calhoun St., Houston, Tex., CA **$77,500**, natural gas lines, PASADENA, TEX. Parkwood Subdivision, c/o C. O. Beeler, Beeler Lumber Co., 4715 Calhoun St., Houston, Tex.

C. O. Beeler, Interests, 4715 Calhoun St., Houston, Tex. CA **$77,750**, sanitary sewers; CA **$76,500**, storm sewers, PASADENA, TEX. Parkwood Subdivision, c/o C. O. Beeler, Beeler Lumber Co., 4715 Calhoun St., Houston, Tex. CD 11/23.

C. O. Beeler, Interests, 4715 Calhoun St., Houston, Tex., CA **$55,000**, c.i. water lines, facilities, PASADENA, TEX. Parkwood Subdivision, c/o C. O. Beeler, Beeler Lumber Co., 4715 Calhoun St., Houston, Tex.

C. O. Beeler, Interests, 4715 Calhoun St., Houston, Tex. CA **$80,000**, asphalt paved streets, curb and gutter, PASADENA, TEX. Parkwood Subdivision, c/o C. O. Beeler, Beeler Lumber Co., 4715 Calhoun St., Houston, Tex.

C. O. Beeler, Interests, 4715 Calhoun St., Houston, Tex. CA **$47,500**, bldg. site area earthwork, grading, PASADENA, TEX. Parkwood Subdivision, c/o C. O. Beeler, Beeler Lumber Co., 4715 Calhoun St., Houston, Tex.

BUILDINGS—LB & CA

M. Shapiro & Sons, 400 Alta Dena Court, University City 5, Mo. Owner Builds. **$445,815**. forty-two 1 story RESIDENCES, Reavis Gardens subdivision on Shopfield Lane, AFFTON (ST. LOUIS 23 P. O.), MO.

▲ **Wm. H. & Nelson Cunliff Co.**, 3320 Lindell Blvd., St. Louis 3, Mo. CA Est. **$2,000,000**. 1 story, brick, steel, rein.-con., campus-type BUILDINGS, on 56 acre tract Warson Rd. north of here, LADUE, (ST. LOUIS 24 P. O.), MO. St. Louis Country Day School, Ashby T. Harper, headmaster, 5600 Country Day Lane, Berkeley 21, Mo. CD 3/8.

Jones-Kissner Constr. Co., 706 Chestnut St., St. Louis 1, Mo. CA Est. **$350,000**. 1 story, brick L-shaped parochial SCHOOL LEMAY (ST. LOUIS 23 P. O.), MO. Mary Queen of the Universe Parish, Rev. William J. Hanlon, pastor, c/o Archdiocesan Bldg. Comn., Rev. James R. Hartnett, exec. secy., 3810 Lindell Blvd., St. Louis 8, Mo. Bids Dec. 29. CD 12/16.

† **John Kalicak Bldg. Constr. Co.**, 4487 Hunt Ave., St. Louis 10, Mo. LB **$142,500**, est. $141,489. modification, modernization, rehabilitation of 3 existing BLDGS., constr. RIFLE RANGE BLDG. for St. Louis Army Reserve, at 5909 Kennerly Ave., AV 23-207-56-14, ST. LOUIS, MO. Headquarters, 5040 SU. Purch. & Contg. Office, St. Louis Area Support Center, 12 and Spruce Sts., St. Louis 2, Mo. Bids Dec. 30. CD 12/16.

Green Constr. Co., Manhattan, Kan. CA **$346,102**. 1 story, bsmnt., 35x56 ft. SENIOR HIGH SCHOOL addn., 1 story, 179x252 ft. ELEMENTARY SCHOOL, OSAWATOMIE, KAN. School Dist. 14, Bd. Educ., Mary Hohenstein, clk., Osawatomie, Kan. Brinkman & Hogan, Mutual Bldg., Emporia, Kan., archts. Bids Nov. 29.

J. J. Holmes, 816 E. 31 St., Austin, Tex. Own Forces. **$394,500**, 37 DWELLINGS; **$365,000**, 30 DWELLINGS in Tract No. 1, ABILENE, TEX. CD 9/2.

Longhorn Investment Co., 9620 John West Rd., Dallas, Tex. Own Forces. **$382,290**, (F) 35 DWELLINGS; **$395,595** (G) 37 DWELLINGS, ABILENE, TEX. CD 9/2.

▲ **Harold T. Bailey, Contr. & Assocs.**, 2728 Agnes St., Corpus Christi, Tex. Own Forces. **$350,000**, 30 DWELLINGS; **$345,500**, 28 DWELLINGS; **$368,500**, 32 DWELLINGS, BISHOP, TEX. Grand total $1,064,000. CD 11/22.

Cothrum-Murray Co., Inc., c/o W. H. Cothrum, 2116 N. Field St., Dallas, Tex. Own Forces. **$362,600**, 33 DWELLINGS; **$350,000**, 35 DWELLINGS, DALLAS, TEX. CD 9/23.

Peterson Constr. Co., 4306 Capitol St., Dallas, Tex. Own Forces. **$357,690**, 19 DWELLINGS; **$368,445**, 22 DWELLINGS, DALLAS, TEX. CD 12/5.

▲ **Westglen Park Subdivision**, c/o Robert West, 2826 Arroyo St., Dallas, Tex. Own Forces. **$391,700**, 33 DWELLINGS; **$369,160**, 27 DWELLINGS; **$372,125**, 31 DWELLINGS, DALLAS, TEX. Grand total $1,132,985. CD 11/16.

▲ **Robert E. McKee General Contractor, Inc.**, Box 562, El Paso, Tex., CA **$1,141,300**, Technical Junior HIGH SCHOOL, EL PASO, TEX. El Paso Independent School Dist., 1000 W. Rio Grande St., El Paso, Tex. Bids Nov. 22. CD 7/14.

▲ **John Broadhead & W. D. Wiser**, Forney, Tex. Own Forces. **$363,185**, 28 DWELLINGS; **$385,000**, 32 DWELLINGS; **$362,110**, 22 DWELLINGS, FORNEY, TEX. Grand total $1,110,295. CD 10/27.

Dicker & Jerome, 911 St. Joseph St., Dallas, Tex. Own Forces. **$394,500**, (E) 34 DWELLINGS, GARLAND, TEX. CD 9/19.

Bailey-Evans Co., 4137 Reed Rd., Houston, Tex. Own Forces. **$382,165**, 41 DWELLINGS; **$398,200**, 45 DWELLINGS, HOUSTON, TEX. CD 11/22.

Elton Brimberry, Contr., 4363 Rosslyn St., Houston, Tex. Own Forces. **$378,110**, 23 DWELLINGS; **$369,000**, 19 DWELLINGS, HOUSTON, TEX. CD 8/31.

Charnwood, Inc., 3015 Post Oak Rd., Houston, Tex. Owner Builds. **$360,000**, 12 DWELLINGS; **$385,000**, 11 DWELLINGS, HOUSTON, TEX. CD 12/9.

S. E. Higginbotham Constr. Co., 8608 Park Terrace Blvd., Houston, Tex. Own Forces. **$355,000**, 16 DWELLINGS, HOUSTON, TEX. CD 8/26.

Harold P. Hill Constr. Co., 8608 Park Terrace Blvd., Houston, Tex. Own Forces. **$372,500**, 23 DWELLINGS; **$395,500**, 27 DWELLINGS, HOUSTON, TEX. CD 8/17.

Krist Hubert, Builder, 5104 Elm St., Houston, Tex. CA **$365,190**, 25 DWELLINGS; CA **$378,190**, 30 DWELLINGS, HOUSTON, TEX. Krist Hubert & Assocs., 5104 Elm St., Houston, Tex. CD 11/30.

Robert Kirschke, Box 12071, Houston, Tex., LB **$128,242**. WAREHOUSING, HOUSTON, TEX. Ideal Builders Hardware Co., Inc., 903 Sampson St., Houston, Tex.

▲ **N. E. Kennedy & Son**, 1st Natl. Bank Bldg., Houston, Tex., CA **$370,160**, 20 DWELLINGS; CA **$376,000**, 24 DWELLINGS; CA **$373,185**, 18 DWELLINGS, 15 mi. from courthouse, HOUSTON, TEX. Grand total $1,119,345. Jersey Village Development Co., c/o N. E. Kennedy & Assocs., 1st Natl. Bank Bldg., Houston, Tex. CD 12/2.

Jersey Village Development Co., N. E. Kennedy & Assocs., 1st Natl. Bank Bldg., Houston, Tex. Own Forces. **$351,500**, 16 DWELLINGS; **$378,175**, 22 DWELLINGS, 15 mi. from courthouse, HOUSTON, TEX. CD 12/2.

L. E. Kerbow, 2003 Lazy Creek, Houston, Tex. Own Forces. **$379,500**, 26 DWELLINGS; **$370,225**, 23 DWELLINGS, HOUSTON, TEX. CD 8/26.

Candoo Constr. Co., 7311 Almeda St., Houston, Tex. CA **$425,000**. PLANT and OFFICE, HOUSTON, TEX. Koenig Enterprises, 2214 Washington St., Houston, Tex. J. Hale Smyth, 2422 Rice Blvd., Houston, Tex., archt. Thermal Eng. Corp., 2605 W. Dallas St., Houston, Tex., and A. Karl Wetzig, 1903 Dunstan St., Houston, Tex., engrs. CD 6/16.

▲ **Kulp & Gibson**, 50th St. at Elgin Ave., Lubbock, Tex. and 6351 Camp Bowie Blvd., Fort Worth, Tex. Owner Builds. **$378,615**, Job 5, 28 DWELLINGS; **$345,125**, Job 6, 23 DWELLINGS; **$372,225**, Job 7, 27 DWELLINGS, LUBBOCK, TEX. Grand total $1,095,965. CD 10/13.

C. W. Clyde Jr. & Laurence & Frank Melton, Mesquite, Tex. Own Forces. **$359,410**, 31 DWELLINGS; **$367,175**, 35 DWELLINGS, MESQUITE, TEX. CD 12/8.

West Texas Housing & Development Co., c/o Paul McHargue, Union Oil Co. Bldg., Houston, Tex. Own Forces. **$377,500**, 30 DWELLINGS; **$384,685**, 33 DWELLINGS, MIDLAND, TEX. CD 12/8.

C. O. Beeler Constr. Div., 4715 Calhoun St., Houston, Tex., CA **$379,420**, 36 DWELLINGS; CA **$356,500**, 30 DWELLINGS, PASADENA, TEX. C. O. Beeler & Assocs., 4715 Calhoun St., Houston, Tex. CD 10/26.

Bellaire Lumber Co., 7902 S. Flores St., San Antonio, Tex. Owner Builds. **$376,225**, 28 DWELLINGS; **$385,000**, 31 DWELLINGS, SAN ANTONIO, TEX.

Western Foundry Co., c/o Israel Smith, Tyler, Tex. Purchase and Hire. **$210,000**, brass mfg. PLANT unit; **$95,000**, WAREHOUSING, TYLER, TEX.

▲† **Martin K. Eby Constr. Co., Inc.**, 610 N. Main St., Wichita, Kan. LB **$1,626,236** (7 bidders) army family HOUSING, 126 units, FORT RILEY, KAN. U. S. Eng., Federal Office Bldg., Kansas City, Mo. Bids Dec. 28. CD 12/13.

▲ **Henry Shanedling Sons Corp.**, 2025 Nicollet Ave., Minneapolis, Minn. Owner Builds. **$1,000,000**. Parkington Plaza SHOPPING CENTER, BILLINGS, MONT. CD 10/20.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **Ariz., Tucson**—APRON, RUNWAY, etc.—BA 1/27—U. S. Eng. 751 S. Figueroa St., Los Angeles, Calif., apron and runway extension, Davis-Monthan Air Force Base, ENG-04-353-56-80, $2,500,000. CD 8/27/54.

† **Ariz., Yuma**—TRAINING, etc.—BA 1/27—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., high altitude training bldg., officers quarters, Yuma County Airport, ENG-04-353-56-79, $500,000. CD 12/11/52.

† **Arizona-California**—BA 3/6—Bureau Reclamation, Dpt. Interior, Phoenix, multi-channel microwave radio communication sys. from Phoenix, Ariz. to Parker Dam, Calif., Parker-Davis Proj., Spec. DC-4602; adv. ENR 1/19. CD 9/21/44.

BUILDINGS—BA

Calif., Anaheim—SCHOOL—BA 1/26—Anaheim School Dist., Anaheim, frame, stucco Anaheim High School addns. $400,000. Smith, Powell & Morgridge, 208 W. 8 St., Los Angeles, archts. CD 4/19.

Wash., Bremerton—SCHOOL—BA 1/26—School Dist. 100-C, 30,921 sq. ft., rein.-con. or masonry, Naval Ave. Elementary School. $400,000. Plans deposit $25. Branch & Branch, 2616 S. 11 St., archts. CD 12/9.

Wash., Walla Walla—LIBRARY—BA 1/27—Whitman College, Walla Walla, 3 story, 75x180 ft., masonry library. $600,000. H. E. Crawford, Walla Walla, archt. CD 6/17.

† **Calif., Barstow**—PLANT—BA 1/31—Eleventh Naval Dist., San Diego, dry provisions and cold storage plant, incl. refrigeration. $100,000. Plans deposit $30.

BUILDINGS—SLC

▲ **Calif., Fullerton**—INDUSTRIAL and OFFICE—Moore Business Forms, Inc., 1002 S. Hope St., Los Angeles, soon lets contract 160,000 sq. ft. industrial and office, $1,000,000. Daniel, Mann, Johnson & Mendenhall, 4201 Sunset Blvd., Los Angeles, archts. CD 11/29.

▲ **Calif., San Leandro**—MARKET—Bay Fair Shopping Center, c/o Victor Gruen & Assoc., archts, 971 Sutter St., San Francisco, soon lets contract (first unit), Macy's Store, another department store, supermarket, bank, post office and group of small stores, $4,000,000. CD 4/9/53.

▲ **Wash., Seattle**—PLANT, etc.—Sicks' Seattle Brewing & Malting Co., 3100 Airport Way, soon lets contract, 2 story 100x120 ft. packaging plant and 1 story 100x120 ft., warehouse both rein.-con. $2,000,000, incl. equip. Wohleb & Wohleb, 715 S. Washington St., Olympia, archts. CD 10/21.

HEAVY CONSTRUCTION—LB & CA

Enoch Smith Sons Co., 1441 Beck St., Salt Lake City, Utah, LB **$511,228**. water distr. lines, Sec. 3 (west) OGDEN, UTAH. Weber Basin Conservancy Dist., E. J. Fjeldsted, 506 Kiesel Bldg., Ogden, Utah. Bids Jan. 4. CD 12/29.

(Continued on page 92)

Earthwork Ahead of schedule on 49 miles of lateral ditches for Columbia-River-Basin Irrigation Project

In the "Big Bend" country, State of Washington, main canals for the Columbia-River-Basin Irrigation Project are complete. These canals carry water 150 mi. from Grand Coulee Dam to the 1¼-million acre "Basin", where ½ million acres of land are irrigated.

Branches from the main canals are now being built for distribution of water to the remaining ¾ million acres of dry and dusty sage-brush land. The irrigated land, in units of 65 to 110 acres, will be sold to farmers for gardening and grazing at prices from $25 to $85 per acre. This huge project is being constructed for the Bureau of Reclamation, U. S. Dept. of Interior.

Cherf Bros. & Sandkay, Ephrata, Wash., have 5 C Tournapulls helping to build 49 miles of lateral ditches for this project. These laterals are built by the "economic fill" method (see diagram). "C's" build a flat road-like runway, averaging 2′ high, 12′ wide, firmly compacted. Dragline follows, digging ditch in center of "run", piling dirt along each side to increase height of banks. Water level will be maintained about 6″ below top of compacted dirt level. Eventually, ditch will be cement-lined.

"Really move muck"

Describing the performance of C Tournapulls used for building the "run", Roy Johnson, of Cherf Bros. & Sandkay, said, "We like Tournapulls because they get around fast, really move muck! Perfect size for this kind of job." Tournapulls' top travel speed to 28 mph helped on both long and short hauls. Easy maneuverability, electric controls, and big brakes are made for fast handling all through the cycle.

"Move dirt cheaper"

Supt. Robert Smith added: "Tournapulls keep us ahead of schedule, move dirt cheaper than other rigs." Smith especially liked the way operators could use Tournapull's positive electric power-steer to pivot prime-mover from side to side where footing was soft. This permitted "walking" the drive wheels out of tough spots while making fast delivery of big loads to the fill.

"Differential makes the difference"

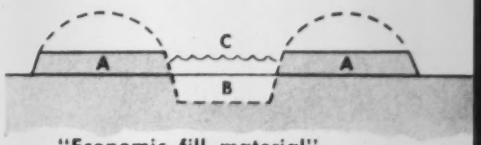
According to Tournapull operator Tom Carder, "These 'Pulls are the only outfits that could do this job. Other rigs would get stuck. It's the Tournapull differential that makes the difference. I sure like 'em!" Carder has had thousands of hours at Tournapull's electric controls. He knows from experience how the power-proportioning differential helps pull through soft going, rides faster and easier on the turns, by automatically transferring power to the wheel on firmest footing.

Why not check with Tournapull owners to find out what these handy, high-speed dirtmovers can do for you? Or, ask for a demonstration on your job! Your LeTourneau-Westinghouse Distributor will be glad to help you in every way to get the real facts for yourself.

C Tournapulls load a mixture of light sandy silt and gravel from a canal cut and haul ¼ mile to build canal banks.

Canal-bed built by spreading thin layers of material, compacted by rolling action of the wide rubber tires of C Tournapulls.

One "C", equipped with tank, used full time to haul water to cuts and fill. Continuous watering helped scrapers get bigger loads out of cuts, aided in compaction of material on fill.



"Economic fill material"

A. Flat, compacted, road-like bed, about 2′ high, 12′ wide, built by Tournapulls.

B. Average 3′ ditch dug by dragline, dirt piled on sides to raise banks.

C. Eventual water-line just below top level of compacted dirt

Tournapull—Trademark Reg. U.S. Pat. Off. P-901-A-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

(Continued from page 90)

† **J. K. Porter Constr. Co.**, P.O. Box 5127, Phoenix, Ariz., CA, **$115,287**, radio receiver bldg., Naval Air Facility, NOY 85209, LITCHFIELD PARK, ARIZ. Dist. P. Wks. Office, Eleventh Naval Dist., San Diego 32, Calif. CD 11/16, under LB.

† **Schwake Constr. Co.**, Gardnerville, Nev., CA **$100,000**, channel clearing on Carson River for 3½ mi. upstream from Gardnerville, NEVADA. U. S. Eng., 1209 8th St., Sacramento, Calif. Awarded Dec. 29.

† **Valley Constr. Co., Inc.**, 7722 Rainier Ave., Seattle Wash., LB **$60,178**, est. $60,178, earthwork, structures Block 421, laterals and sublaterals, East Low Canal laterals, Columbia Basin Proj., Spec. DC 4546, WASHINGTON, Bureau Reclamation Dpt. Interior, Ephrata, Wash. Bids Dec. 15. CD 11/15.

† **Associated Dredging Co.**, 1702 Bridgeway Blvd., Sausalito, Calif., LB **$150,000**, operation of suction dredge for use on Nicholas break in east levee, Feather River, Yuba Co., Sutter Co. CALIFORNIA. U. S. Eng., 1209 8 St., Sacramento, Calif.

▲ **The Bechtel Corp.**, 220 Bush St., San Francisco, Calif., CA rein.-con. with crest 425 ft. long, incl. 4 radial gates, 50x40 ft., Poe Project diversion dam on north fork of Feather River, approx. 25 mi. north of Oroville, CALIFORNIA. Pacific Gas & Electric Co., 245 Market St., San Francisco, Calif. CD 11/9.

CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento,

A. Teichert & Son, Inc., 1931 Stockton Blvd., Sacramento, Calif., CA, **$938,574**, four-lane freeway 3 mi. Hy. 99 between Kingsley Rd. and Mariposa Rd., San Joaquin Co. Bids Nov. 30, awarded Jan. 3. CD 1/26, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,

Grove, Shepherd, Wilson & Kruge of California, Inc., 120 6 Ave. North, Seattle, Wash., CA **$2,361,255** structure to complete Eastshore Freeway viaduct between distribution structure and Market St., Oakland, Alameda Co. Bids Dec. 14, awarded Jan. 3. CD 12/22, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

Calif.—**Gordon H. Ball and Ball & Simpson**, 685 Delaware St., Berkeley, Calif., CA, **$4,326,890** grading, paving two 37 ft. roadbeds for 4-lane divided freeway for 5.8 mi. Eastshore Freeway between Beard Rd. and Jackson St. and 11 bridges, one pumping plant, Hayward, Alameda Co.;

Calif.—**R. A. Westbrook, Inc. & Morrison Knudsen Co., Inc.**, 411 W. 5 St., Los Angeles, Calif., CA, **$1,318,157**, grading, surf. 11.8 mi. Sherwin Grade between Birchim Canyon and Whiskey Canyon, U. S. 395, Inyo and Mono Counties. Bids Dec. 21, awarded Jan. 3. CD 12/29, under LB.

CALIFORNIA—State Div. Hys., 1120 N St., Sacramento,

M. W. Brown, P.O. Box 827, Redding, Calif., CA, **$551,471**, grading, surf. 4.7 mi. Hy. 99 south of Yreka to Oberlin Rd. for initial 2 lanes for ultimate four-lane expressway and 2 bridges, Siskiyou Co. Bids Nov. 23, awarded Jan. 3. CD 11/30, under LB.

▲† **H. Earl Parker**, 12 and F Sts., Marysville, Calif., CA, **$1,000,000**, repairing 3,000 ft. Feather River levee break at Shanghai Bend, Yuba City, Sutter Co. Awarded Dec. 26. CA **$400,000**, repair levee damage of Yuba River over distance of 2 mi. in vicinity of Marysville, Yuba Co., CALIFORNIA. U. S. Eng., 1209 8 St., Sacramento, Calif. Grand total, $2,435,000;

San Francisco Bridge Co., 140 Montgomery St., San Francisco, Calif., CA, **$200,000**, hydraulic dredging to provide fill for Yuba City levee break, Yuba City, Sutter Co. Awarded Dec. 27 (California).

Associated Dredging Co., 1702 Bridgeway Blvd., Sausalito, Calif., CA, **$300,000**, repair break, east levee of Feather River, Nicolous, Sutter Co. Awarded Dec. 29 (California);

P. E. Woof, 2203 N. Fruit Ave., Fresno, Calif., CA, **$300,000**, restoring channels and levee damaged by floods by St. Johns and Kaweah Rivers vicinity of Visalia, Tulare Co. Awarded Dec. 25 (California);

Kerr & Wilson, Visalia, Calif., CA **$160,000**, repairing north levee and debris removal on Kaweah River at head waters of Peoples Ditch, Visalia, Tulare Co. Awarded Jan. 3 (California);

Lester L. Rice & Sons, P.O. Box 408, Yuba City, Calif., CA **$75,000**, livestock carcus clean up in Yuba City and Nicholaus flood areas Sutter Co. Awarded Jan. 1 (California).

† **Fred A. Arnold**, 3105 Hollycrest Dr., Hollywood 28, Calif., CA, **$100,185**, supply facility for Long Beach Group, Pacific Reserve Fleet, Long Beach Naval Shipyard, NOY 90843, LONG BEACH, CALIF. Eleventh Naval Dist., San Diego, Calif.

Texas Co., 929 S. Broadway, Los Angeles, Calif. Owner Builds. **$256,000**, frame cooling tower and pump basin structure, San Pedro District, LOS ANGELES, CALIF. E. L. Iverolo, 929 S. Broadway, Los Angeles, Calif., engr.

▲† **P. C. Bateson Constr. Co.**, 6800 Benton Dr., Dallas, Tex., LB, **$2,072,308**, (13 bidders), base maintenance hangar, Edwards Air Force Base, ENG-04-353-56-3, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Jan. 5. CD 12/16.

McGuire & Hester, 796-66 Ave., Oakland, Calif., LB, **$86,735**, pipe lines G and G8 and B2, Spec. FC-2-1, Castro Valley, OAKLAND, CALIF. Alameda Co. Flood Control Dist., Court House, 1225 Fallon St., Oakland, Calif.

BUILDINGS—LB & CA

Leonard Homes, Inc., 15307 1 Ave. S., Seattle, Wash. Day Labor, **$430,850**, 33 HOUSES, 148 Pl. S. E., BELLEVUE, WASH.

Gene Sauer Constr. Co., 2502 N. 24 St., Phoenix, Ariz., LB **$510,000**, HIGH SCHOOL, AGUA FRIA, ARIZ. Agua Fria Union High School Dist., Agua Fria, Ariz. Edward L. Varney, 221 East Camelback St., Phoenix, Ariz., archt.

Oltmans Constr. Co., 516 S. Monterey Pass Rd., Monterey Park, Calif., CA, **$150,000**, 30,000 sq. ft. WAREHOUSE, 2343 Saybrook St., EAST LOS ANGELES, CALIF. Hull Branch Service Corp., 11717 Ventura Blvd., North Hollywood, Calif.

Oltmans Constr. Co., Inc., 1560 Monterey Pass Rd., Monterey Park, Calif., CA, **$362,487**, 1 story, tilt-up concrete WAREHOUSE, San Julian St., Bellflower, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Dec. 2, awarded Dec. 22. CD 4/8.

Carnation Co., 5045 Wilshire Blvd., Los Angeles, Calif., Owner Builds, **$101,000**, WAREHOUSE addn. and FOOD PROCESSING BLDG., LOS ANGELES, CALIF. John Case, 2901 E. Olympic St., Los Angeles, Calif., engr.

Reitenger & Baxter, 611 S. Glenoaks Ave., Burbank, Calif., LB, **$654,390**. (7 bidders) Ethel Ave. SCHOOL, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Dec. 29. CD 5/25.

▲ **Stoneson Development Corp.**, 3150 20 Ave., San Francisco, Calif. Owner Builds. **$1,764,000**. 126 HOME sub-division, MILLBRAE, CALIF. CD 7/29/54.

▲ **Hoefer Constr. Co.**, 16645 Orange Way, Fontana, Calif., CA, **$1,031,780**, ELEMENTARY SCHOOLS No. 13, 14 and 15, ONTARIO, CALIF. Ontario Elementary School Dist., Ontario, Calif. Bids Dec. 15, awarded Dec. 28. CD 12/23, under LB.

H. N. Dickerman & Assoc., 2297 S. Town Ave., Los Angeles, Calif., CA, **$511,500**. 50 frame, stucco DWELLINGS, Angela, Cynthia and Palomares Sts., POMONA, CALIF. Westside Homes, 2297 S. Town Ave., Pomona, Calif.

▲ **Van Ness Constr. Co.**, 5055 Dublin Ave., Oakland, Calif., Owner Builds, **$1,012,500**. 75 HOME subdivision, VALLEJO, CALIF. Lillis & Smith, 912 Tennessee St., Vallejo, archts. CD 12/14.

CANADA

HEAVY CONSTRUCTION—BA

▲ **Ont., Ottawa**—HANGARS, etc.—BA 2/2—Defence Constr. Ltd., 56 Lyon St., two 160 ft. span structural steel hangars, outside services, R. C. A. F. Station, Uplands, $3,100,000. Plans deposit $100.

BUILDINGS—BA

Que., Louiseville—SCHOOL—BA 1/24—La Commission Scolaire de Louiseville, Louiseville, 4 story, bsmnt., 57x130 ft., rein.-con. brick, St. Louis de Gonzague School and residence, $400,000. Plans deposit $50. Germain Chabot, 236 St. Jean St., Quebec City, archt. CD 4/7.

HEAVY CONSTRUCTION—LB & CA

Mannix-O'Sullivan Paving Co. Ltd., 604 Northern Hardware Bldg., Edmonton, Alta., CA, **$186,135**, roads and curbs, Griesbach army barracks, EDMONTON, ALTA. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Awarded Dec. 30.

▲ **G. A. Baert Constr. Co. Ltd.**, 314 Dawson Rd., Winnipeg, Man., CA **$4,209,270** (6 bidders) 7 story, 488x350 ft. 360-bed hospital addnl. plus outpatients dept., X-ray depts., offices, laboratories, therapy facilities, WINNIPEG, MAN. Winnipeg General Hospital Bd., Bannatyne Ave., Winnipeg, Man. Bids Dec. 21, awarded Dec. 29. CD 12/19.

Industrial Warehouse Constr. Co. Ltd., 3 Parnell Ave., Toronto, Ont., CA Est. $200,000, 1 story, 80x210 ft., concrete block, brick PLANT and OFFICE, TORONTO, ONT. Colchester Machinery Corp. Ltd., 3 Parnell Ave., Toronto, Ont. Awarded Dec. 20.

Robinson Constr. Regd., Gatineau, Que., CA, **$337,000**, collector sewer in East and Gousin Sts., GATINEAU, QUE. Town, Town Hall, Gatineau, Que. J. Y. Bernier, 235 Gamelin Blvd., Hull, engr.

Gaspe Equipment & Transport Ltd., Gaspe, Que., LB, **$180,707**, airport at House Harbour on Allright Island, HOUSE HARBOR, QUE. Dpt. of Transport, Hunter Bldg., Ottawa, Ont. Bids Dec. 12. CD 12/5.

Shouqist Constr. Ltd., 410 Cuchess St., Saskatoon, Sask., CA, **$199,422**, water treatment plant, incl. new river intake and water pumphouse ESTEVAN, SASK. Town, Town Hall, Estevan, Sask. Bids Dec. 7, awarded Dec. 23.

BUILDINGS—LB & CA

▲ **Buchanan Constr. & Eng. Co.**, 10237 98 St., Edmonton, Alta., CA, Total est. **$1,000,000**, excavation and 70,000 sq. ft. footings for new PLYWOOD FACTORY, EDMONTON, ALTA. Western Plywood Co. Ltd., 900 East Kent St., Vancouver, B. C., awarded Dec. 23. CD 10/17.

Standard Iron & Eng. Co. Ltd., 107 Ave. and 120 St., Edmonton, Alta., CA, structural steel (Edmonton, Alta.);

Bird Constr. Co., 12525 127 Ave., Edmonton, Alta., CA, spur track for 25-ton crane (Edmonton, Alta.).

Vandike Constr. Co., 257 Conmee Ave., Sault Ste. Marie, Ont., Owner Builds, **$600,000**. 60 employee's HOUSING units, near site of factory, THESSALON, ONT.

Jackson-Lewis Co. Ltd., 80 King St. W., Toronto, Ont., CA, **$850,000**, 7 story, rein.-con., masonry, steel OFFICE, 10 St. Mary St., TORONTO, ONT. Ten St. Mary St. Realty Corp., Ltd., 80 King St. W., Toronto, Ont. Awarded Jan. 4. CD 1/9.

▲ **Home Builders, Inc.**, 18 Lakeshore Rd., Pointe Claire, Que., CA, **$16,000,000**. housing, incl. 1,000 BUNGALOWS and COTTAGES, ILE PEROTT NORTH, QUE. Island Realties Ltd., 18 Lakeshore Rd., Pointe Claire, Que. CD 1/9.

Leon M. Adler, 2200 Ward Ave., Ville St. Laurent, Montreal, Que., CA, **$350,000**. 2 story, bsmnt., 100x200 ft., steel, brick, block STORES and OFFICES, Van Horne and Victoria Aves., MONTREAL, QUE. Advance Holdings Corp., c/o Thibodeau & Thibodeau, archts., 940 Cote de Lesse Rd., Montreal, Que. Bids Nov. 22, awarded Dec. 29. CD 11/16.

Lucien Bedard & Co., 934 St. Catherine St. E., Montreal, Que., CA, **$350,000**, Dollier de Casson SCHOOL Addn., MONTREAL, QUE. Montreal Catholic School Comn., 117 St. Catherine St. W., Montreal, Que. Jean Damphousee, 408 Prairies Blvd., Laval des Rapides, Que., archt.

St. Denis Constr. Ltd., 1540 Beauregard St., Ville Jacques Cartier, Que., CA, Est. **$470,000**. 60-bed HOSPITAL Addn., MONTREAL, QUE. Dr. G. Hori, 1385 Jean Talon St. E., Montreal, Que. (Correction—contractor). CD 12/1, under CA

Brandon Constr. Inc., 3790 Bergerac St., Montreal North, Que., Owner Builds, **$400,000**. 22 semi-detached duplexes HOUSING program, MONTREAL, QUE.

▲ **Monkland Constr. Ltd.**, 5470 Notre Dame de Grace Ave., Montreal, Que. Owner Builds, **$1,000,000**, 60-unit HOUSING program, Tanguay and Meilleur Sts., MONTREAL, QUE.

ALASKA

HEAVY CONSTRUCTION—BA

† **Alaska**—TACAN and WHITE-ALICE FACILITY—BA 1/30—U. S. Eng., Anchorage, complete TACAN and White-Alice Facility, incl. Type 3 navaid bldg., roads, parking areas, fuel tanks, etc. Middleton Island, ENG-56-30. $100,000.

HEAVY CONSTRUCTION—LB & CA

† **C. Berg, Inc.**, 2730 Westlake Ave. N., Seattle, Wash. CA **$591,500**, "Team 202" Laboratory and Dental Clinic. Items 1 and 2-A of Schedule A, Items 1 and 2 of Schedule B, Eielson Air Force Base, Inv. 56-17. ALASKA. U. S. Eng., Anchorage, Alaska. Bids Dec. 22. CD 1/4 under LB.

FOREIGN

HEAVY CONSTRUCTION—BA

Iraq—BA 4/17—The Development Bd. & Ministry of Development, Baghdad, Iraq, constr. steel cantilever road bridge approx. 180 metres long and 11 metres wide over the River Euphrates at Nasiriyah, together with steel and rein.-con. approach viaducts and embankments thereto. Plans deposit ID 10,000; adv. ENR 1/19.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Mo., Maryville**—City, Robert Peart, clk., WW sys. imprvs., extens., water plant, 2 m.g. capacity, extens., imprv. distr. lines, another elevated tank, alternate of either another 70, m.g. storage reservoir or a lake to impound 350 million gal. and dam, **$814,600** to **$995,600**, Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs.

▲ **Tex., Dallas**—City, City Hall, bond election Jan. 31, WW. $14,250,000. CD 3/23/54.

Que., Mackayville—Town, Town Hall, water piping, **$820,700**. Lalonde, Girouard & Letendre, 7379 St. Hubert St., Montreal, consult. engrs. CD 1/30/53.

▲ **Alaska, Anchorage**—City, City Hall, filtration plant, **$1,800,000**. Stevens & Thompson, Spalding Bldg., Portland, Ore. and Alenar, Associated, Anchorage, consult. engrs. Construction planned for 1957; completion of water main rehabilitation downtown area and exten. to Lake Otis School, **$510,000**, develop water well and install pumps, **$80,000**. Scheduled for 1956. G. Shannon, city mgr. CD 9/25/53.

SEWERS, WASTE DISPOSAL

▲ **Calif., Sacramento**—City, 9 and I Sts., drainage work, incl. line and pumping station in East Sacramento and pumping station, drainage facilities south of Sutterville Heights. $1,200,000.

▲ **Ill., Berwyn**—City, City Hall, sanitary and storm sewers, **$2,500,000**. Edwin Hancock Eng. Co., 1509 Jackson Blvd., Chicago, consult. engr. CD 9/6/51.

Mich., Flint—City, City Finance Comn., bond election Feb. 1, sewer projs. **$888,000**. CD 11/27/50.

▲ **Tex., Dallas**—City, City Hall, bond election Jan. 31, storm sewers, **$2,900,000**; sanitary sewers, **$7,650,000**. CD 5/8/52.

▲ **Utah, Granger**—Granger-Hunter Imprvt. Dist., 3530 South 2820 West, sewer collection sys., treatment plant. **$1,400,000**. Templeton & Linke, 500 Dooly Bldg., Salt Lake City, consult. engrs.

▲ **Que., Mackayville**—Town, Town Hall, trunk sewer in Mackayville and passing thru parts of adjacent communities of Ville Jacques Cartier, Greenfield Park and St. Lambert, **$4,132,000**. Lalonde, Girouard & Letendre, 7379 St. Hubert St., Montreal, consult. engrs. CD 1/20/53.

(Continued on page 94)

Trimming back banks, 2½-yard shovel loads Rear-Dumps with 9 to 10 tons of granite and dirt, in an average of three passes. Loading time in this rocky going: about 1 minute 50 seconds.

"Can't be beat for work in cramped quarters," says supt. on mountain road job

To relocate four miles of dangerous, winding, one-way highway through the Sierra Nevada mountains in western California, Ball & Simpson, Berkeley, moved about 800,000 cubic yards of granite.

This job required sturdy haul equipment that would move rock fast during the summer months before snow closed roads for the winter. To handle this work, company drove in three, sure-footed, 28 mph D Tournapull Rear-Dumps.

Work faster on mountain roads

Tournapulls' 90° turning ability, provided by instant-acting, easy-to-operate power steer, enabled these Rear-Dumps to spot for load and dump faster and more safely than could a conventional dump-truck.

Giant multi-disc four-wheel air brakes, with more brake surface on one wheel than most haulers have on all four, gave operators confidence to use Tournapulls' top speeds on steep, narrow mountain grades.

Says Operator Gordon D. Wood, "These Tournapull Rear-Dumps have good brakes that you can depend on to stop *right now*. Machines are easy to handle, too. They certainly get around good in narrow spots."

Because of Tournapull's advantages, each Rear-Dump was able to average 1000′ cycles in 4 minutes 10 seconds.

Superintendent E. E. Frost, said that, in the best production he could recall, each of the three Rear-Dumps hauled 200 loads 300′ down a steep grade, during one 10-hour day.

He describes this relocation job on the Sonora Pass Road as one of the toughest examples of rock road work he had ever seen. "Tournapull Rear-Dumps can't be beat. They are a wonderful piece of equipment for this type of work. Tournapulls run in and get under a shovel so much easier than a truck!"

No major repairs in 3 years

During three seasons in the Sierra Nevada mountains, machines have experienced very little downtime, needed no major repairs. Although the three "D's" have been used more than 2500 hours each, original tires are still in good condition.

Why not check on what this power, speed, and production can do on your hauling jobs? Ask your LeTourneau-Westinghouse Distributor for owner-verified production figures on the size Rear-Dump best suited to your job . . . the 11-ton "D" . . . the 22-ton "C" . . . or the big 35-ton "B".

Tournapull dumps in ½ minute, including time maneuvering to edge of bank. "They're fast dumpers" says Operator Gordon D. Wood. Working a 58-hour week, Tournapulls hauled 75% of the material in this road relocation. Balance was moved by 2 crawler-scraper combinations and 2 crawler-dozers.

Rear-Dumps hauled granite-fill for relocation of 4 miles of mountain highway. The new, modern, two-way road, built under the direction of the Bureau of Public Roads, eliminates a narrow winding section of the Sonora Pass Road (State Route 108), between Dardanelle and Strawberry.

Tournapull—Trademark Reg. U.S. Pat. Off. DR-914-H-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

(Continued from page 92)

BRIDGES

▲ **Mich., Houghton**—Bd. Rd. Comrs. Houghton Co., County Bldg., Houghton County Bridge. $5,000,000. C. F. Winkler, County Bldg. engr. Bids first phase of constr. Aug. 1956.

▲ **Tex., Dallas**—City, City Hall, bond election Jan. 31, bridges. $1,000,000.

STREETS AND ROADS

ALABAMA—State Hy Dpt., Montgomery, **Jefferson Co.**—widening Roebuck Hy. which branches and becomes U. S. 11 and Ala. 32 Over $500,000.

▲ **CALIFORNIA**—State Div. Hy., Wks. Bldg., Sacramento, **Santa Clara Co.**—approx. 7.5 mi. 6-lane highway, San Carlos to San Carlos, $6,500,000. Bids in May.

▲ **Mich., Flint**—City, City Finance Comn., bond election Feb. 1, road projs. $1,112,000.

▲ **Tex., Dallas**—City, City Hall, bond election Jan. 31 street imprvs., paving, $12,000,000. CD 11/21/51.

EARTHWORK, WATERWAYS

▲ **Quebec**—Price Bros. & Co. Ltd., 65 Ste. Ann St., Quebec City, Shipshaw River power development incl. dam and power plant at river mouth near Kenogami, $19,000,000. Ramsay Milne, c/o owner, ch. engr. Montreal Eng. Co., Ltd., 244 St. James St. W., Montreal, consult engrs. Work to start in May.

AIRPORTS

† **Ariz., Tucson**—OFFICERS' QUARTERS—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., plans by John Brenner & Assoc., Title & Trust Bldg., Phoenix, officers' quarters, Davis-Monthan Air Force Base. $500,000. CD 8/9.

O., Elyria-Lorain—AIRPORT—Elyria-Lorain Airport Com., Robert Williamson, chn., Infirmary Rd., Elyria, Inter-City Airport, to incl. site preparation paving, lighting, bldgs., etc. $690,000. CD 9/21/44, under O., Elyria.

† **Va., Fort Belvoir**—HANGAR, etc.—U. S. Eng., 1st and Douglas Sts. N. W. Wash. 25, D. C., hangar and misc. bldgs. $500,000-$1,000,000. CD 7/17/52, under Public Buildings.

▲† **Tex., Duncanville**—RADAR AIR STATION—Department of the Air Force, The Pentagon, Wash. 25, D. C. remodel existing radar air station of the 745th aircraft and warning squadron, $1,500,000.

Wash., Yakima—RUNWAY—City, City Hall, defeated bonds, 2,500 ft. runway exten. municipal airport. $692,000. CD 11/23.

LATIN AMERICA

Mexico, Durango—Carnation de Mexico, Queretaro City, plans evaporated milk factory. $600,000.

▲ **Mexico, Mexico City**—Direccion de Pensiones, P. de La Reforma, Mexico City, plans 550 family apartment house. $10,000,000. Vincente Moctezuma, c/o owner, engr.

▲ **Mexico, Salina Cruz**—Cia. Fundidora del Pacificio, Salina Cruz, plans iron-steel works. $5,000,000.

PUBLIC BUILDINGS

Calif., Huntington Beach—HIGH SCHOOL—Huntington Beach Union High School Dist., Huntington Beach, plans by Neptune & Thomas, 1560 W. Colorado St., Pasadena, high school, Westminister Area, $500,000.

▲ **Calif., San Leandro**—SCHOOLS—San Leandro Unified School Dist., 451 W. Joaquin Ave., bond election Mar. 13, high school, John Muir High School, Bancroft Junior High School, San Leandro High School and Wilson and Halcyon Elementary School addns. $6,000,000. CD 6/11/54.

Calif., San Pablo—SCHOOL ADDNS.—San Pablo Elementary School Dist., P. O. Box 65, defeated $500,000 bonds, school addns. CD10/26.

Calif., Ventura—COURT HOUSE—Ventura Co., Court House, plans by Harold Burket, 740 E. Main St., Ventura, 5 story court house addn. $550,000.

▲ **Conn., Rockville**—HIGH SCHOOL—Town of Vernon, John Talcott, chn. School Bldg. Com., Rockville, plans by Jeter & Cook, 36 Pearl St., Hartford, high school, $1,200,000. CD 12/30/54.

Del., Newport—SCHOOL—Absolom Jones Jr. High School District, Newport, plans by W. Ellis Preston, 903 Jefferson St., Wilmington, Absolom Jones School addn. $900,000. CD 11/29.

▲ **Fla., Miami**—SCHOOLS—Bd. P. Instruction, School Administration Bldg., 275 N. W. 2 St., Miami, plans by Joseph J. DeBrita, 12865 W. Dixie Hy., North Miami, Westwood Lake Elementary School $500,000; West Palm Springs Elementary School $500,000; Wesson Village Elementary School $500,000; Tropical Elementary School, 10301 S. W. 48 St., $500,000; Norland Elementary School, 1055 N. W. 193 St., $500,000; Rainbow Park Elementary School $500,000; plans by Pancoast Ferandino, Skeels & Burnham, 927 41 St., Miami Beach, Broadmoor Manor Elementary School $500,000; plans by Henry Hohauser & Assocs., 4011 Chase Ave., Miami Beach, Carol City Elementary School $500,000; plans by Edwin T. Reeder & Assocs., 1777 Biscayne Blvd., Miami, G. W. Carver School addn. and auditorium $344,000; plans by Irving Horsey, 9822 N.E. 2 Ave., Miami Shores, Dorsey Junior High School addn. $344,000; plans by Gordon Severud, 2971 Coray Way, Miami, Myrtle Grove Elementary School, 16613 N. W. 29 Ave., $500,000; plans by John E. Peterson & Frank H. Shuflin, 206 Roper Bldg., Miami, West Hialeah Junior High School, $750,000. CD 11/3.

▲ **Ill., Arlington Heights**—HIGH SCHOOL—Arlington Heights Twp. School, 502 W. Euclid Ave., plans by Nichol & Nichol, 23 E. Jackson Blvd., Chicago, Zone 4, high school and gymnasium, $3,500,000.

▲ **Ill., Aurora**—SCHOOLS—School District 129, 152 Glenwood Ave., plans by Berger & Kelley, 44 Main St., Champaign, Junior High School, N. Walnut St., $1,350,000, plans by Grayliz & Mall, 909 S. Batavia St., Geneva, grade school, N. Elmwood and Illinois Ave., $450,000. CD 10/11.

▲ **Ill., Chicago**—HOUSING—Chicago Housing Auth., 608 S. Dearborn St., Chicago, Zone 5, plans by Shaw, Metz & Dolin, 208 S. La Salle St., Zone 4, 150-unit housing, 40 and Lake Park Ave., $1,000,000; plans by Nicol & Nicol, 23 E. Jackson St., Zone 4, 204-unit housing, 2820 Calumet Ave., $1,500,000. CD 2/2/50.

▲ **Ill., East St. Louis**—HOUSING—East St. Louis Housing Auth., Paul Rugger, dir., 6 and Ohio Ave., plans by Joseph D. Standish and Joseph Goldenberg, engr.-archts., 1101 Spivey Bldg., East St. Louis 300-unit housing proj. in southern section of city, $3,000,000. CD 7/20.

▲† **Ill., Great Lakes**—HOUSING—Ninth Naval Dist., Great Lakes Naval Training Station, Great Lakes, plans by L. M. Yost & D. C. Taylor, 500 Green Bay Rd., Kenilworth, Capehart Housing, Green Bay Rd. north of Buckley Rd., $7,965,000. Evert Kincaid, 105 W. Madison St., Chicago, Zone 5, consult. engr. on site.

Ill., Waukegan—GRADE SCHOOL—School District 61, 574 McAllister Ave., grade school, $630,000.

Ind., Elwood—SCHOOL—School City, 1 story school on south side, $540,000.

▲ **Ind., Kendallville**—POWER PLANT—City, Andrew Milner, mayor, Kendallville, imprv. municipal power plant, double present capacity, using new plant, est. $2,485,000; using present plant, est. $2,253,000. Pfeifer & Schultz, Wesley Temple Bldg., Minneapolis, Minn., consult. engrs.

▲ **Mass., Chelmsford**—SCHOOLS—Town, 50 Billerica St., high school, North Rd. and Old Westford Rd., $2,000,000. CD 9/11/50.

▲ **Mass., Framingham**—WARD—State, Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, plans by Curtin & Riley, 45 Newbury St., Boston, M-729 alterations, conversion ward bldg., boiler plant, Home for the Aged. $1,650,000. CD 5/6/54.

Mass., Grafton—SCHOOLS—Town, 3 Central Square, plans by Doak Martin, 8 Norwich St., Worcester, 3 schools. $900,000-$1,000,000.

▲ **Mass., Lowell**—INDUSTRIAL RESEARCH—State, Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, plans by Krokyn & Browne, 184 Boylston St., Boston, E-812, 5 story, 1,500,000 cu. ft. industrial research bldg., Lowell Technical Institute, $1,000,000.

Mass., North Easton—SCHOOL—Town, High School Bldg., plans by Rich & Tucker Assoc., 45 Newbury St., Boston, school, Columbus Ave. and Sheridan St., $900,000-$1,000,000.

▲ **Mich., Holt**—SCHOOL—Bd. Educ., Rex Smith, supt. Schools, plans by St. Clair Pardee, 202 State St., East St. Joseph, high school, $1,500,000.

▲ **Mich., Rochester**—SCHOOL—City, Bd. Educ., voted $1,150,000 bonds Dec. 12, schools. CD 11/4.

Minn., Cook—SCHOOL—Bd. Educ., St. Louis Co., W. W. Salmi, supt. County Schools, plans by Jyring & Whitemaa, Hibbing, school, remodel existing bldg. $750,000. Constr. late this year or 1957.

▲ **N. J., Millville**—HIGH SCHOOL—Millville Bd. Educ., Memorial High School addn., alterations, $1,000,000.

▲ **O., Brecksville**—HIGH SCHOOL—Bd. Educ., 8915 Highland Dr., high school, $1,500,000; elementary school, $500,000. CD 11/8/54.

▲ **O., Cleveland**—SCHOOL—Cleveland Institute of Music, Frank E. Taplin, pres., 3411 Euclid Ave., Zone 15, plans by Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., Zone 14, school. $1,000,000. Bids late spring. CD 11/25.

▲ **O., Hamilton**—LIGHT PLANT—City, City Hall, install 22,000 kw generating unit at municipal light plant. $4,000,000.

▲ **O., Kent**—SCHOOL—Bd. Educ., Kent, plans by Fulton, Krinsky & DelaMotte, 6014 Euclid Ave., Cleveland, Zone 3, Junior and Senior High School. $1,530,000. CD 9/29/53.

† **O., Maple Heights**—TRAINING CENTER—Department of the Air Force, The Pentagon, Wash. 25, D. C., 2 story reserve training center, on Warrensville Center Rd., south of Libby Rd. $500,000. To go ahead 1956.

Pa., Berwyn—SCHOOL—Paoli Area High School System, Berwyn, Junior High School, $750,000.

▲ **Pa., Newtown**—SCHOOL—Council Rock Joint School Bd., Richboro Rd., plans by Heacock & Platt, 1505 Race St., Phila., Council Rock Junior-Senior High School addn., Richboro Rd. $1,100,000.

▲† **Tenn., Kingsport**—POST OFFICE—General Services Admin., General Services Bldg., Avenue F, 18 and 19th Sts. N. W., Wash., D. C., plans by Allen N. Dryden, Kingsport, post office. $1,013,000. CD 11/23/45.

Tex., Dallas—FIRE STATIONS—City, City Hall, bond election Jan. 31, fire stations group, $600,000.

▲ **Tex., Denton**—HIGH SCHOOL—Denton Independent School Dist., Denton, plans by Wyatt C. Hedrick, 904 S. Fort Worth Ave., Dallas, high school. $1,500,000. CD 10/5.

▲ **Tex., Longview**—HOSPITAL—Gregg County Memorial Hospital, Longview, plans by Wilson, Morris & Crain, 3330 Graustark St., Houston, 4 story hospital addn. $1,000,000. CD 2/18.

▲† **Va., Richmond**—FEDERAL—General Services Admin., General Service Bldg., Avenue F, between 18 and 19th Sts., N. W., Wash., D. C., plans by Marcellus Wright & Son, 100 E. Main St., and Merrill C. Lee, 601 E. Franklin St., federal office bldg. $7,410,000. CD 7/29.

Wash., Morton—HIGH SCHOOL—School District 214, Morton, bond election Feb. 7, high school $518,000. W. A. Johnson & Assocs., N. Broadway, Everett, archts. CD 11/23/54.

▲ **Alta., Edmonton**—ADMINISTRATION—Defence Construction (1951) Ltd., 56 Lyon St., Ottawa, Ont., 3 story, part bsmnt., 140x400 ft., rein.-con. brick administration bldg. at Griesbach army barracks, $1,250,000. Bids in January.

Ont., Port Arthur—HIGH SCHOOL—Port Arthur Bd. Educ., Central School, high school $500,000.

▲ **Ont., Windsor**—CITY HALL—City, C. V. Waters, clk. plans by Sheppard & Masson, 52 Chatham St. W., city hall in civil square. $1,750,000.

COMMERCIAL BUILDINGS

▲ **Calif., Canoga Park**—DWELLINGS—Tampa Homes, Inc. 5484½ N. Hollywood Way, Burbank, 215 frame, stucco dwellings, Irondale St. etc. $2,450,000.

▲ **Calif., Los Angeles**—SHOPPING CENTER—Sylmar Square, Shopping Center, c/o Daniel, Mann, Johnson & Mendenhall, archts., 4201 Sunset Blvd., Los Angeles, shopping center, Sylmar District. $2,500,000.

▲ **Calif., Los Angeles**—HOSPITAL—Valley Presbyterian Hospital, 1322 N. Vermont Ave., Los Angeles, plans by Pereira & Luckman, 9220 Sunset Blvd., Los Angeles, 60-bed hospital, Van Owen and Noble Aves., Van Nuys District, $1,150,000. CD 5/20/49.

▲ **Calif., Oakland**—HOTEL—Belle Haven Realty Co., 1470 E. 3 Ave., San Mateo, 200-unit hotel, 19 and Harrison Sts., $2,500,000.

▲ **Calif., San Jose**—HEADQUARTERS—Young Men's Christian Assn., 220 Golden Gate Ave., plans by Higgins & Root, 220 Meridian Rd., Y.M.C.A. headquarters bldg. Naglee Ave. and The Alameda, $1,257,000. CD 4/20.

▲ **Conn., Hartford**—HOSPITAL—Mount Sinai Hospital, 500 Blue Hills Ave., plans by Ebbets, Frid & Prentice, 862 Asylum Ave., Hartford, hospital addn. $2,500,000.

▲ **Conn., Windsor**—GYMNASIUM, etc.—Loomis Institute, Loomis Rd., plans by Jeter & Cooke, 36 Pearl St., Hartford, ten-year development program, incl. gymnasium, classroom wing, science bldg., dormitories and auditorium, $3,500,000. Loomis & Sullivan, 641 Farmington Ave., Hartford, consult. engrs. CD 6/2/54.

▲ **Fla., Miami**—SHOPPING CENTER—West Flager Amusement Co., Lawrence Levenson, vice pres., Congress Pl., shopping center, N. W. 7 to 11 Sts., and N. W. 37 to 39 Aves., $10,000,000-$15,000,000.

Fla., Naples—RESIDENCES—Homecrafters, Inc., Rte. 2, Fort Meyers, plans by Tyrus T. Tripp, 1520 Ponce de Leon Blvd., Coral Gables, 72 residences, near State Rd. 80, $800,000.

Ill., Arlington Heights—SHOPPING CENTER—Kimball Hill & Co., 2003 Campbell Ave., plans by A. J. Del Bianco, 5501 Irving Park Rd., Chicago, shopping center, $500,000.

▲ **Ind., Indianapolis**—COLLEGE—Indiana Central College, 4001 S. Otterbein St., academic hall and gymnasium, $1,500,000.

▲ **Iowa, Des Moines**—Y.M.C.A.—Young Men's Christian Assn., 9 and High Sts., plans by Wetherell & Harrison, 506 Shops Bldg., Des Moines, Y.M.C.A. bldg., $2,500,000. Bids in Spring. CD 12/14/53.

▲ **Ky., Covington**—COLLEGE—Villa Madonna College, 116 E. 12 St., plans by Thos. J. Nolan & Sons, Kentucky Home Life Bldg., Louisville, administration bldg., science bldg., 3 story each, Turkey Foot Rd., Kenton Co. $1,000,000.

▲ **Ky., Lexington**—HOSPITAL—St. Joseph's Hospital, 554 W. Second St., plans by Potter, Tyler, Martin & Roth, 128 E. Sixth St., Cincinnati, O., 7 story, brick, rein.-con. hospital, $4,000,000. CD 10/12.

▲ **Mass., Wakefield**—OFFICE—American Mutual Liability Insurance Co., 142 Berkeley St., Boston, plans by Chester Lindsay Churchill, 9 Newbury St., Boston, home office, Rte. 128 and Lake Quannapowit, $2,000,000. Bids early 1956. CD 10/20/54.

Mo., North Kansas City—SCHOOL—Diocese of St. Joseph, Bishop John Cody, apostolic admin., St. Joseph, plans by Maurice Carroll, 5473 Delmar St., St. Louis, St. Pius X High School, 46 and Davidson Sts., $600,000.

Nev., Reno—HOTEL—Mert Wertheimer & Assoc., c/o Frank Green, archt., 6155 Lakeside Dr., remodel ground floor of Riverside Hotel. $500,000.

N. J., Haddonfield—CLUB—Tavistock Country Club, Haddonfield, plans by Peter Michael Senin, 1303 E. Sharpnack St., Phila., Pa., club addns., $500,000.

▲ **N. J., Hopewell**—RESIDENTIAL DEVELOPMENT—Bryercliff Development Corp., c/o Harry Maslow, archt., 275 Morris Ave., Elizabeth, 17-unit residential development, Route 69, Hopewell Twp. $3,500,000.

N. Y., Brooklyn—APARTMENT—42 E. 53 St., Corp., 21 E. 40 St., New York, Zone 17, plans by Seelig & Finkelstein, 153 Pierrepoint St., Zone 2, 6 story apartment, 130 E. 18 St. $580,000.

▲ **N. Y., Buffalo**—OFFICE—Irons & Reynolds, Inc., 420 Lexington Ave., New York, Zone 17, plans by F. J. & W. A. Kidd, 524 Franklin Ave., 19 story office, Main St. and Lafayette Square, $5,000,000.

▲ **N. Y., New York**—APARTMENT—Chatham Green, Inc., c/o Kelly & Gruzen, archts., 80 Fifth Ave.,

and office, $1,000,000. Sterling Engineers, 1621

group of co-operative apartments Park Row, Pearl St., Madison St. and St. James Pl. $6,000,000.

▲ **N. Y., New York**—APARTMENT—Jesse Secoles, 860 Fifth Ave., Zone 21, 19 story apartment at 1260-68 Third Ave., southwest corner of 73 St. $1,500,000.

N. Y., Syracuse—HOTEL—First Trust & Deposit Co., Trustees of Klock Estate, S. Warren St., hotel on site of M. Klock Mansion, 1052-72 E. Genesee St., $750,000.

N. D., Mandan—HOSPITAL—Memorial Hospital, Mandan, hospital. $600,000.

O., East Cleveland—MOTEL—N & H Constr. Co., 2540 N. Moreland Blvd., Cleveland, Zone 20, 5 story, 55-room motel, swimming pool, restaurant and walled in parking lot, Euclid and Strathmore Aves. $500,000. Frank Eroskey & Assocs., Rose Bldg., Cleveland, Zone 15, consult. engrs.

▲ **O., Findlay**—SHOPPING CENTER—Findlay Shopping Center, Inc., c/o C. D. Glickman, 17631 Winslow St., Cleveland, 100,000 sq. ft. shopping center, junction Rte. 12 and U. S. Rte. 224, east of here, 1,000 car capacity parking. $1,000,000. Constr. to start in early spring.

▲ **Okla., Oklahoma City**—HOSPITAL—Baptist General Convention, 1141 N. Robinson St., plans by Oston, Frankfurt & Short, 323 Madison St., 500-bed capacity hospital (200 beds for 1st unit), $2,000,000; medical center, $1,000,000; nurses home, staff housing, $400,000; Golden Age Home for elderly folk, $350,000.

▲ **Pa., Quakertown**—RESIDENTIAL DEVELOPMENT—Anastasi Bros., 300 E. Mt. Airy Ave., Phila., residential development, 200 units Hickey Tract, $3,000,000.

Tex., Fort Worth—HOUSES—Arlington Heights West, Inc., 200 Houston St., plans by L. B. Mayfield, 1913 Bluebird St., approx. 500 brick tile houses and shopping center on Denton Hy. $500,000.

▲ **Wash., Seattle** — HOSPITAL — Group Health Cooperative, 200 15 Ave. N., Seattle, plans by Young & Richardson, Carleton & Detlie, Central Bldg., Seattle, Zone 4, 150-bed hospital, $2,150,000. Bids next summer. CD 11/22.

▲ **Wash., Seattle**—HOSPITAL—Missionary Sisters of the Sacred Heart, 2520 N. Lakewood St., Chicago, Ill., 6 story Columbus Hospital addn. Over $1,000,000.

Alta., Calgary—HOTEL—Owner, c/o Rex A. Miller, archt., 1004 Sifton Blvd., Calgary, 80-room, 2 story, 88x155 ft., hotel with 12,000 sq. ft. parking area, $750,000.

▲ **Alta., Edmonton**—OFFICE—Allard Building Co. Ltd., Edmonton, plans by Bell & McCulloch, Edmonton, 10 story office bldg., $2,000,000.

▲ **Alta., Edmonton**—OFFICE—Financial Building Co., Ltd., Edmonton, plans by C. T. Larrington, Edmonton, 11 story office. $1,500,000. Angus Butler & Assocs., Edmonton, engrs.

▲ **Man., St. Boniface**—HOUSING DEVELOPMENT—Ladco Co. Ltd., 2281 Portage Ave., Winnipeg, plans by Green, Blankstein, Russell & Assocs., 222 Osborne St., Winnipeg, housing development area bounded by Archibald, Elizabeth Dawson and Niakwa Rds., Over $10,000,000. W. L. Wardrob & Assocs., Parks Bldg., Winnipeg, consult. engrs.

▲ **Man., Winnipeg**—OFFICE—Great West Life Assurance Co., Lombard St., plans by Marani & Morris, 1250 Bay St., Toronto, Ont., office, Osborne St. $10,000,000. CD 12/7/54.

▲ **Ont., Niagara Falls**—HOTEL—Sheraton Ltd., 1455 Peel St., Montreal, Que., plans by Duncan M. McIntosh, consult. archt., 36 James St. S., Hamilton, 100-room hotel addn. at Foxhead Hotel. $1,000,000. CD 12/28.

▲ **Ont., Toronto**—OFFICE—Eleven Adelaide St. West Ltd., c/o Bregman & Hamann, 7 Adelaide St. E., and Harry B. Kohl, 1407 Yonge St., Toronto, archts., 12 story, 91x130 ft., rein.-con., structural steel frame office bldg. with 8 story parking garage, $4,750,000.

▲ **Ont., Toronto**—HOTEL—Ben Seaton, 45 Wembley Rd., revised plans by E. I. Richmond, 455 Spadina Ave., 21 story, rein.-con. hotel with 5-story garage, 36 Carlton St. $6,000,000. Alex Tobias, 24 Cecil St., and W. Sefton & Assocs., 901 Yonge St., both Toronto, consult. engrs. CD 3/24.

Que., Berthier—HOUSING—Alfred Biron, 259 Montcalm St., housing program, $500,000.

Que., Montreal—SYNAGOGUE—Adath Jeshurun Hadrath Kodesh Congregation, 4459 St. Urbain St., plans by Ben-Ami Shulman, 5174 Cote des Neiges Rd., 1 story, bsmnt., 80x210 ft., rein.-con., brick, stone synagogue. Over $500,000.

Que., Montreal—DEPARTMENT STORE—J. Corbeil, 6500 St. Hubert St., reconstr. department store, $500,000.

▲ **Que., Montreal**—CULTURAL CENTER—Slovak Community Center, c/o Steve Sura, 40 Morrison Ave., Mount Royal, Montreal, plans by Patsy Colangelo, 8259 St. Lawrence Blvd., rein.-con. cultural center, Durocher and Jean Talon Sts., $1,000,000. CD 9/12.

▲ **Que., Jonquiere**—COLLEGE—Les Peres Oblats de Marie Immaculee, Barsar's Office, 116 Notre Dame St., Hull, plans by Paul Marie Cote, 582 Lamarche Blvd., Chicoutimi, classical college, $1,500,000. CD 6/27.

▲ **Que., Trois Pisols**—HOSPITAL—Rev. Soeurs de Notre Dame du Perpetuel Secours, Trois Pistols, Hospice Notre Dame des Anes hospital addn. Notre Dame St. Over $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Ill., Des Plaines**—WAREHOUSE, etc.—Alco-Deree Corp., 4300 N. California St., Chicago, warehouse

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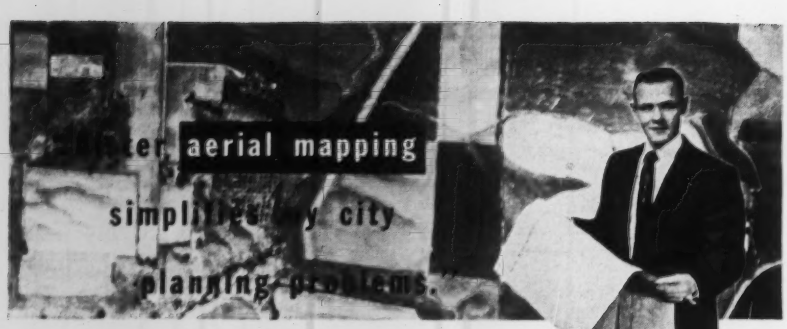

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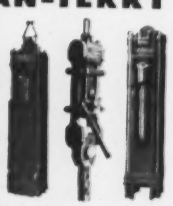

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and office, $1,000,000. Sterling Engineers, 1621 Dobson St., Evanston, consult. engr. CD 9/28.

▲ **Ind., East Chicago**—PLANT—The Youngstown Sheet & Tube Co., East Chicago, steel frame industrial seamless tube plant, $1,400,000. Anthon J. Mosso, 923 Penn Ave., Pittsburgh 22, Pa., consult. engr. CD 11/1/51.

Iowa., Burlington—PLANT—Champion Spark Plug Co., (Iowa Industries), 900 Upton Ave., Toledo, O., 100,000 sq. ft., plant, $800,000.

▲ **Kan., Dodge City**—GENERATING PLANT—Western Light & Telephone Co., Great Bend, generating plant. $3,000,000.

Mich., Bay City—PLANT—Chevrolet Div., General Motors Corp., Ralph L. Powell, mgr., 1535 N. Madison St., plans by Argonaut Realty Div., General Motors Corp., General Motors Bldg., Detroit, Zone 2, 57,000 sq. ft. plant addn., material handling facilities. $625,000.

Minn., Hastings—PLANT—King Midas Flour Mills, Grain Exchange, Minneapolis, grain cleaning plant, $700,000-$900,000. Constr. in Spring.

▲ **Mo., Olivette (St. Louis 14 P. O.)**—PLANT—Carter Carburetor Corp., Magnus F. Peterson, pres., 2840 N. Spring Ave., St. Louis, Zone 7, plans by Sverdrup & Parcel, Inc., engr.-archt., 915 Olive St., St. Louis, Zone 1, addnl. plant facilities, incl. production, laboratories, executive offices, 46 acre tract adjacent to present bldg. on Olive St. Rd., block west of Price Rd. $1,000,000.

▲ **N. M., Brickland**—REFINERY—El Paso Natural Gas Co., El Paso, Tex., refinery expansion, $1,000,000.

▲ **N. M., Prewitt**—CATALYTIC REFORMING UNIT—El Paso Natural Gas Co., El Paso, Tex., catalytic reforming unit, $1,500,000.

▲ **O., Ashtabula**—PLANT—General Tire & Rubber Co., 1708 Englewood St., Akron, poly-vinyl chloride resin plant addn., Middle Rd. Plant. $2,000,000-$3,000,000. Constr. planned to start in early spring.

▲ **O., Cleveland**—PLANT—Burdett Oxygen Co., 3300 Lakeside Ave., Zone 14, new liquid oxygen plant alterations at present location. $1,000,000.

O., Cleveland—PLANT OFFICE, etc.—Wellman Eng. & McDowell Co., 3203 W. 71 St., Zone 9, 2 story, approx. 50,000-75,000 sq. ft. bldg. to house office and engineering personnel of the two companies, at Wellman's Locomotive Crane Div., at 16226 Waterloo Rd. $500,000.

Wash., Renton—PLANT—Container Corp. of America, 4634 E. Marginal Way, Seattle, 80,000 sq. ft. folding-carton plant. $925,000. Site-changed. CD 11/17, under Wash., Seattle.

Wis., La Crosse—ENGINEERING—Trane Co., 206 Cameron Ave., plans by Fairbrother & Miehls, 345 New Center Bldg., Detroit, Mich. and Albert Kahn Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., engr. and archt. consultants, 1 story bsmnt., 65,000 sq. ft. engineering bldg. $650,000.

▲ **Ont., Bruce Lake**—IRON MINE, etc.—Iron Bay Mines Ltd., c/o Chimo Gold Mines Ltd., 25 Adelaide St., W., Toronto, iron mine, process plants with 80-mi. railway line and 90-mi. natural gas line, $30,000,000. Hains Eng. Co. Ltd., 77 York St., Toronto, consult. engrs. for plant. M. W. Bartley, 231 Arthur St., Port Arthur, consult. engr. for mine.

▲ **Sask., Beaverlodge**—MILLING FACILITIES—Eldorado Mining & Refining Co. Ltd., Box 379, Ottawa, Ont., expanding milling facilities at uranium mine, $6,500,000; addnl. power plant, underground equipment, other services at uranium mine, $5,800,000.

UNCLASSIFIED

Calif., South San Francisco—PARKING LOT—City, City Hall, 7 parking lots in Grand and Linden Ave. area. $500,000.

▲ **Mich., Muskegon**—ARENA—City, A. J. Leutscher, clk., municipal sports arena. $1,000,000. George Clark, city engr.

N. Y., Brooklyn—TELEVISION BROADCASTING AND STUDIO—National Broadcasting Co., 30 Rockefeller Plaza, New York, Zone 20, plans by Degenhardt, Miller & Lindberg, 31 Union Square, New York, Zone 3, 4 story television broadcasting and studio bldg. at 1301-25 Ave. M and 1262-1296 E. 14 St., $750,000.

▲ **Tex., Dallas**—PARKS—City, City Hall, bond election Jan. 31, municipal parks, $2,600,000. CD 12/13/45.

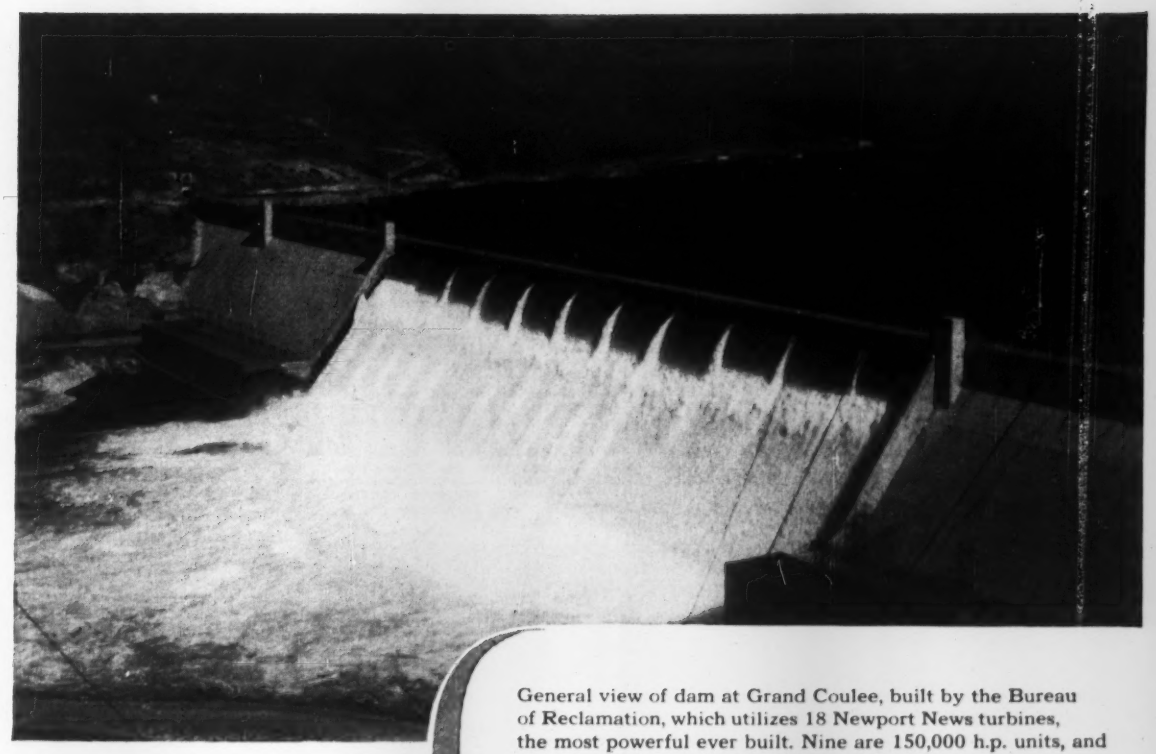
Wash., Tacoma—PARK—Metropolitan Park Dist., City Hall, bond election Feb. 14, imprv. Point Defiance Park, incl. addnl. parking areas, seawall, retaining walls, new pier, etc. $600,000.

▲ **Alaska, Anchorage**—STREET LIGHTS, etc.—City, City Hall, install street lights, extend transmission line to Bureau of Reclamation sub-station, etc. $400,000; expand city telephone sys., $1,250,000; development of parks, $150,000. Work to be carried out in 1956. G. Shannon, city mgr. CD 10/11.

▲ **Alberta**—GAS PIPE LINE—Alberta Gas Trunk Line Co. Ltd., 320 9 Ave. W., Calgary, 547 mi. gas pipe line to serve as gathering sys. within Alberta. $47,000,000.

N. B., St. John—PIER, etc.—National Harbors Bd., West Block, Parliament Bldgs., Ottawa, Ont. completion of pier bldgs., grain galleries, on new extensions of Piers 2 and 3, West St. John Harbor. $750,000; dredging in West St. John Harbor. $155,000; 80 ft. extension to Pier No. 1, West St. John Harbor. $75,000.

▲ **Ont., Hamilton**—DOCK FACILITIES—International Harvester Co. of Canada Ltd., 200 Hillyard Ave., dock facilities expansion. $1,400,000.



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NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 30 Connecticut

STREETS AND ROADS

January 25 Maine January 30 Connecticut
February 21 Massachusetts

BUILDINGS—BA

▲ **Mass., Boston**—PAULIST CENTER—BA 1/25—Missionary Society of St. Paul the Apostle, Paulist Fathers, 5 Park St., Paulist Center. $1,000,000. Maginnis & Walsh & Kennedy, 126 Newbury St., archts. CD 3/15.

BUILDINGS—LB & CA

Wadhams & May Co., 15 Lewis St., Hartford, Conn., LB $661,000. NURSES HOME addn., NORWALK, CONN. Norwalk Hospital Assoc., Norwalk, Conn. Gilroy & Gaydosh, 64 Wall St., Norwalk, Conn., archts.

Waterbury Constr. Co. Inc., 225 S. Leonard St., Waterbury, Conn., CA $866,000, est. $870,000. Walsh SCHOOL repairs, alterations, addns., WATERBURY, CONN. City Bd. Educ., Crosby High School, Waterbury, Conn. CD 1/5, under LB.

▲ **Fusco-Amatruda Co.**, 59 Amity Rd., New Haven, Conn., CA $4,000,000. 200,000 sq. ft. brick, steel SHOPPING CENTER, 2,000 automobile parking area, etc., WINDSOR, CONN. Joseph Vetrano, agent, Bristol, Conn. Rossetti & DiCorcia, 80 Elizabeth St., Hartford, Conn., archts. CD 12/21.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 31 New Jersey

STREETS AND ROADS

January 31 New Jersey February 1 Delaware
February 2 New York

▲ **Md., Baltimore**—BA 1/25—City, Bureau Hys., 303 Municipal Bldg., first section Jones Falls Valley Expressway covering stream from point near Guilford Ave. west to beyond Maryland Ave. $2,500,000. CD 7/24/52.

† **New York**—SPECIAL AAA FACILITIES—BA On Or About 2/14—U. S. Eng., 111 E. 16 St., New York, Zone 3, Special AAA Facilities (EY 55) at Lloyd Harbor, ENG-30-075-56-166, $750,000-$1,000,000. Plans deposit $100. CD 2/18.

▲ **New York**—BA 2/16—Power Authority of the State of New York, 270 Broadway, Zone 7, manufacturing, furnishing, del. 48 intake gate hoists for Barnhart Island Power Plant, Spec. No. PA-5-15052, St. Lawrence Contr. No. P-34. Plans deposit $20. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/18.

BUILDINGS—BA

Pa., Carlisle—CHURCH—BA 2/16—A. Hensel Fink, archt., 1701 Arch St., Phila., church, Sunday School, Fellowship Hall, for Allison Memorial Methodist Church, Carlisle, Pa. $750,000.

HEAVY CONSTRUCTION—LB & CA

† **The Ferber Co.**, 16 Johnson Ave., Hackensack, N. J. CA $933,223. constr. Special AAA Facilities, Brookhaven, NEW YORK, U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 1/4, under LB.

▲ **Tully & DiNapoli, Inc.**, 127-50 Northern Blvd., Corona, N. Y. CA Est. $1,000,000. new duct lines and oilastatic piping in area bounded by Fordham Rd., Bainbridge Ave., Croton Ave. and Harlem River, NEW YORK, N. Y. Consolidated Edison Co., 4 Irving Place, New York 3, N. Y.

Slattery Contg. Corp., 46-36 54 Rd., Maspeth, N. Y. CA Est. $1,000,000. new duct lines and oilastatic piping in area south of Fordham Rd. to Harlem River, (New York, N. Y.).

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg.

G. A. & F. C. Wagman, Inc., 370 E. Main St., Dallastown, Pa. CA $670,305. 0.2 mi., 7-span deck plate girder bridge over Maiden Creek north of Lenhartsville Boro, U. S. Rte. 22, Berks Co. CD 12/29, under LB.

BUILDINGS—LB & CA

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York, N. Y. CA Total est. $75,000,000. 50-60 story OFFICE and PARKING GARAGE, Liberty, William, Pine and Nassau Sts., NEW YORK, N. Y. Chase Manhattan Bank, 18 Pine St., New York 15, N. Y. CD 12/7.

▲ **George A. Fuller Co.**, 597 Madison Ave., New York 22, N. Y., CA, $10,000,000. 20 story HOME OFFICE, Broad St. opposite Washington Park, NEWARK, N. J. Mutual Benefit Life Insurance Co., 300 Broadway, Newark, N. J. CD 1/4/55.

▲ **Earl L. Cump, Inc.**, 251 Park Ave., Chambersburg, Pa. CA $1,077,523. general constr. Secondary SCHOOL for Cresson Joint School Bd., CRESSON, PA. School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. CD 11/25, under LB.

▲ **Fred Morrison**, 825 Bryn Mawr Ave., Narberth, Pa. Separate Contracts. $2,000,000. RESIDENTIAL DEVELOPMENT, 130 units, DEVON, PA.

▲ **Moyer Bros.**, 2605 Beale Ave., Altoona, Pa. CA $4,249,000. general constr. REHABILITATION CENTER for State Dpt. Labor & Industry, JOHNSTOWN, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Grand total $7,238,490. CD 12/16, under LB; **Harry Dougherty & Son, Inc.**, 106 Fifth St., Freeport, Pa. CA $1,440,000. heating work, (Johnstown, Pa.); **Williard, Inc.**, Germantown and Sedgley Aves., Phila., Pa. CA $835,490. plumbing work, (Johnstown, Pa.); **Reese & Bernard Electric Co.**, 132 Park Place, Johnstown, Pa. CA $714,000. electrical work, (Johnstown, Pa.).

▲ **Knowlton Development Co.**, c/o Arters Bros., Lima, Pa. Separate Contracts. $2,000,000. RESIDENTIAL DEVELOPMENT, Milton Rd., LIMA, PA. George Hay, Lima, Pa., archt.

Golder Constr. Co., Market St. National Bank Bldg., Phila., Pa. CA $800,000. BANK, PHILA., PA. First Federal Savings & Loan Assoc., 1321 Point Breeze Ave., Phila., Pa. Thalheimer & Weitz, 1325 Walnut St., Phila., Pa., archts.

▲ **Kaymar Constr. Co., Inc.**, Devon, Pa. Separate Contracts. $50,000,000. RESIDENTIAL DEVELOPMENT, 3,000 units, SUPERMARKET, SHOPPING CENTER, 30 STORES, PHILA., PA. Carroll & Stephenson, 262 S. 15 St., Phila., Pa., archts.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 25 Louisiana, Virginia

STREETS AND ROADS

January 25 Louisiana, Virginia

BUILDINGS—BA

▲ **La., Chalmette**—PLANT—BA 2/8—Kaiser Aluminum & Chemical Corp., Box 1600, Chalmette, D. C. (1) casting facilities bldg., (2) cryolite recovery plant, (3) admin. bldg. addn., (4) small LBS bldg., (5) small D. C. Metal service office. Plans deposit $50 each on first 3 jobs. CD 12/12.

HEAVY CONSTRUCTION—LB & CA

† **T. A. Loving & Co.**, Bank of Wayne Bldg., Goldsboro, N. C., CA $812,582. air force dormitories for enlisted men, Pope Air Force Base, ENG-31-075-56-40, FORT BRAGG, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Dec. 13. CD 12/22, under LB.

▲ **FLORIDA**—State Road Dpt. of Florida, Tallahassee, **Union Bldg. & Constr. Corp. and Central Florida Constr. Co.**, Box 381, Stuart, Fla., CA $1,797,868, grading roadway, const. 8 in. Miami Rock base with Type 1-A bit. surf. tr. and Type I b. conc. surf. course; constr. 12 in. double course Miami Rock base with Type I b. conc. surf. course with binder course; storm sewers; curb and gutter; sidewalks, etc. 5.006 mi. State Roads Nos. 25-A and 9, FAP Nos. U-019-1 (4) and U-026-1 (13), Jobs Nos. 8725-201 and 8724-207, Dade Co. Bids Dec. 22, awarded Jan. 6. CD 12/29, under LB.

G. E. Tillman Co., Inc., 702 Locust St., Centralia, Ill. CA $942,400. WW imprvs., consisting addns. to Cross Lake Water Treatment Plant, SHREVEPORT, LA. City, City Hall, Shreveport, La. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. Awarded Dec. 29. CD 12/19, under LB.

BUILDINGS—LB & CA

Merando, Inc., 4098 Minnesota Ave. N.E., Wash., D. C. CA $631,610. (7 bidders) Ashlawn Elementary SCHOOL, Old Wilson Blvd. and Montague St., ARLINGTON, VA. Arlington Co. Bd. Educ., 1426 Quincy St., Arlington, Va. Bids Jan. 6. CD 12/16.

▲ **Koppers Co., Inc.**, Koppers Bldg., Pittsburgh 19, Pa. CA design and construct SINTERING PLANT and raw ore handling equip., WEIRTON, W. VA. Weirton Steel Co. (subsidiary of National Steel Corp.), Weirton, W. Va. CD 9/24/47.

▲† **T. A. Loving Co.**, Bank of Wayne Bldg., Goldsboro, N. C., CA $3,539,331. family HOUSING, ENG-31-075-56-39, FORT BRAGG, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Dec. 20. CD 12/27, under LB.

Bd. Trustees, Greenwood School Dist. 50, Greenwood, S. C., rejected bids Dec. 15, Brewer HIGH SCHOOL expansion, GREENWOOD, S. C. LB $570,000. James C. Hemphill, Greenwood, S. C., archt., New bids Jan. 10. CD 1/6, under LB.

▲ **A. C. Samford, Inc.**, Albany, Ga., CA, $1,100,000. STORE, ALBANY, GA. Sears, Roebuck & Co., Southern Territory Office, 675 Ponce de Leon Ave. N. E., Atlanta, Ga. Willner & Millkey, 761 Peachtree St. N. E., Atlanta, Ga., archts. Awarded Jan. 7.

Barge-Thompson, 136 Ellis St. N. E., Atlanta, Ga., CA, $600,000. PLANT, ATLANTA, GA. Southern Dairies, 51 Ivy St., Atlanta, Ga. Awarded Jan. 5.

Perrilliat-Rickey Constr. Co., 1430 S. Rendon St., New Orleans, La. CA $989,400. (7 bidders) steel, masonry parochial SCHOOL, CAFETERIA, SISTERS' RESIDENCE, AUDITORIUM, GYMNASIUM BLDGS., NEW ORLEANS, LA. Lady of Lourdes Congregation, Freret St. and Napoleon Ave., New Orleans, La. Bids Dec. 1, awarded Dec. 31. CD 11/18.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 24, 27 Michigan January 27 Illinois

STREETS AND ROADS

January 24, 27 Michigan January 27 Illinois

BUILDINGS—BA

▲ **O., Cincinnati**—HOME FOR THE AGED—BA 2/12—Catholic Diocese of Cincinnati, 423 Commercial Square, 4 story, bsmnt., brick, rein.-conc., steel home for aged on 3-acres, 1950-60 Madison Rd. $1,250,000. Plans deposit $100. Betz & Bankemper, 319 Scott St., Covington, Ky., archts.-engrs. CD 8/10.

Ill., Monticello—SCHOOL, etc.—BA 2/15—Monticello School Dist. Bd. Educ., elementary school and high school facilities, $990,000. D. Clarence Wilson, 1115 Harrison St., Mt. Vernon, archt. CD 6/21.

HEAVY CONSTRUCTION—LB & CA

▲† **United Constr. Co.**, 1204 Lincoln Ave., Pittsburgh, Pa., LB $1,141,000 (1 bidder) constr. Nike Site at Crile VA hospital, Parma Heights; LB $1,091,000 (3 bidders) constr. Nike Site, Garfield Heights, OHIO. U. S. Eng., New Post Office, Pittsburgh, Pa. Bids Dec. 15. CD 11/28.

▲† **Mayfair Constr. Co.**, 5660 N. Kedzie St., Chicago, Ill., CA, $1,155,892, misc. buildings and structures, AAA Sites, Gary, Lake Co., INDIANA. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Nov. 30, Awarded Jan. 3. CD 12/14, under LB.

▲† **M. J. Boyle & Co.**, 2480 Elston St., Chicago, Ill., CA, $1,252,950, misc. buildings and structures, Special AAA Sites near Chicago, Cook Co., ILLINOIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Dec. 20. CD 11/23.

BUILDINGS—LB & CA

▲ **George A. Fuller Co.**, 597 Madison Ave., New York, N. Y., CA Est. $17,000,0000. 22 story OFFICE, to be known as Illuminating Bldg., CLEVELAND, O. 55 Public Square Bldg. Co., Inc., c/o Ostendorf-Morris Co., Public Square, Cleveland 13, O. CD 7/29.

▲ **McDowell Co.**, 3203 W. 71 St., Cleveland 4, O. CA Est. $700,000. design and construct MILL BLDG. for storage of coils, 3341 Jennings Rd., CLEVELAND, O. Jones & Laughlin Steel Corp., 401 Liberty Ave., Pittsburgh, Pa., Awarded Dec. 11.

E. W. Bliss Co., Salem, O., CA $515,500, foundations for new ANNEALING BLDG. at Cleveland works, 3341 Jennings Rd., Awarded 11/26, (Cleveland, O.).

▲ **Fairmount Machinery Co.**, 10th and Belt Line, Fairmount, W. Va., est. $2,500,000. 2½ story, 100x100 ft. watering and drying PLANT in conjunction with coal pipe line now being built, the plant will separate water from coal, EASTLAKE, O. Pittsburgh Consolidation Coal Co., Koppers Bldg., Pittsburgh, Pa. CD 4/28/54 under Ohio, Unclassified.

▲ **Stakich Constr. Co.**, Robert Stakich, pres., 815 E. 185 St., Cleveland, Zone 14, O. Own Forces. $4,600,000. 200 HOMES, RICHMOND HEIGHTS, O. Rudolph J. Grosel, The Arcade, Cleveland 14, O., archt. Awarded Jan. 5. CD 12/1.

Wm. E. Schweitzer, 2207 Dodge St., Evanston, Ill., CA, $850,000, 2 story, 216x260 ft. RESEARCH, 7300 N. Lehigh Ave., NILES, ILL. Warwick Mfg. Co., Zion, Ill. Friedman, Alschuler & Sincere, 223 W. Jackson St., Chicago, Zone 6, archts. Awarded Jan. 3.

▲ **Ben Ipema**, 11148 Preller St., Chicago, Ill., Own Forces, $1,200,000. 75 HOMES, area of Drexel Ave. and 156 St., SOUTH HOLLAND, ILL. Anderson & Assocs., 7915 S. State St., Chicago, Ill., archts.

▲ **Charles Reskin**, 2459 Peterson Rd., Chicago, Ill., Own Forces, $1,300,000, 100 HOMES, VILLA PARK, ILL. A. J. del Bianco, 5501 Irving Park Rd., Chicago, Ill., archt.

▲ **Koppers Co., Inc.**, Koppers Bldg., Pittsburgh 19, Pa. CA design and construct, sintering PLANT, raw ore handling equipment at Zug Island Plant, ECORSE, MICH. Great Lakes Steel Co., (sub National Steel Corp.), Tecumseh Rd., Ecorse, Mich.

▲ **Atkin-Fordon Co.**, 7360 W. Chicago St., Detroit 4, Mich. CA $1,285,575. Albany, Pepper and Dewey SCHOOLS, OAK PARK, MICH. Bd. Educ., School Dist. 3, 23400 Jerome St., Oak Park, Mich. Bids Nov. 29. CD 11/3.

▲ **George W. Lathrop & Sons**, 1510 Monteith St., Toledo, O. CA $1,025,381. DORMITORY No. 1 for women, Michigan State Normal College, YPSILANTI, MICH. State, A. N. Langlus, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich. CD 1/6, under LB.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

January 26 Kansas January 27 Minnesota

BUILDINGS—BA

▲ **Okla., Tulsa**—APARTMENT—BA 2/3—George Gould, 226 E. 4th St., 8 story apartment, 21st and Columbia Sts. $1,000,000.

(Continued on page 100)

Pier designed by Fay, Spofford & Thorndike for the Port of Boston Commission

Raymond COMPLETES NEW SHIP TERMINAL 4 MONTHS AHEAD OF SCHEDULE

THE PORT OF BOSTON gained 4 months unexpected revenue when Raymond completed the East Boston Pier No. 1 in December instead of the following March, as originally scheduled. Among the outstanding features of this project is the approximately 200,000 square feet of unobstructed warehouse space . . . and the latest facilities for transferring cargo directly from ship to train or truck. This mammoth terminal graphically illustrates how Raymond's specialized experience in the complete construction of marine and waterfront structures produces results--in a hurry. Write today for information on how Raymond can serve you.

RAYMOND'S DOMESTIC ACTIVITIES
Foundations . . . Marine structures and Off-shore Construction . . . Heavy Construction . . . Soil Investigation

RAYMOND'S ACTIVITIES ABROAD
Complete service for all types of construction.

Raymond
CONCRETE PILE CO.

140 CEDAR STREET • NEW YORK 6, N. Y.

BRANCH OFFICES
in principal cities of the United States, Canada, Central and South America

(Continued from page 98)

▲ **Mo., Joplin** — SCHOOL — BA 2/14 — Bd. Educ., School Dist. of Joplin, Fern Gray, secy., Admin. Bldg., 827 Pearl Ave., Joplin. Senior High school, $1,500,000. Plans deposit $50 general constr., $25 mechanical work, Peterson & Scharhag, 1103 E. Armour Blvd., Kansas City 9, Mo., archts. CD 4/12.

▲ **Mo., St. Louis**—PLANT—BA 3/15—Union Electric Co. of Missouri, 315 N. 12 Blvd., St. Louis, Zone 1, rein.-con. steel bldgs. to house third section Meramec Plant near junction Mississippi and Meramec Rivers at southeastern end St. Louis Co., Incl. also erection and installation of all equipment auxiliaries and appurtenances for this steam power generating plant, St. Louis County.

BUILDINGS—SLC

N. D., Bismarck—WAREHOUSE—Super-Valu Stores, Inc., Hopkins, Minn., soon lets contract, office and warehouse, on Airport Rd., ½ mi. west of 19th St. railroad crossing. $700,000. Magney, Tusler & Setter, 303 Roanoke Bldg., Minneapolis, Minn., archts. CD 12/22.

▲ **Tex., Dallas**—OFFICE—Dallas Federal Savings & Loan Assn., c/o E. E. Shelton, Magnolia Bldg., soon lets contract, 16 story, 96x99 ft. brick, limestone, concrete, structural steel frame sub-bsmnt. and bsmnt. office. $3,000,000. George L. Dahl, 2101 N. St. Paul St., engr.-archt. CD 12/23.

▲ **Tex., Houston**—PACKHOUSE, etc.—Ideal Cement Co., Gulf Div., San Jacinto Bldg., Houston, and c/o Denver Natl. Bldg., Denver, Colo., soon lets contract, Proj. 360, packhouse and cement storage facilities. $1,000,000-$4,000,000. George Wiley, Denver Natl. Bldg., Denver, Colo., owners gen. engr. CD 6/6.

HEAVY CONSTRUCTION—LB & CA

▲ **MISSOURI**—State Hy. Dpt., Jefferson City,

Mo.—J. A. Tobin Constr. Co., 3700 Rainbow Blvd., Kansas City, Kan. LB **$1,011,072** (7 bidders) graded earth, culverts 10.683 mi. Laclede Co.; LB **$171,991.** (7 bidders) graded earth, culverts 2.59 mi. Laclede Co.;

Mo.—Howard Constr. Co., 1504 N. Osage St., Sedalia, Mo. LB **$760,246.** (4 bidders) plant mix bit. surf. 9.455 mi. Sullivan Co.;

Mo.—Atkinson Windle Co., Chillicothe, Mo. LB **$506,-161.** (3 bidders) c. conc. 5.664 mi. Livingston Co.;

Mo.—Illinois Valley Constr. Co., Keokuk, Iowa. LB **$479,863.** (6 bidders) c. conc. 3.709 mi. Adair Co.;

Mo.—Samuel Kraus Co., and Auxvasse Stone & Gravel Co., 649 Edmund St., St. Louis, Mo. LB **$803,105** (4 bidders) c. conc. 0.81 mi. St. Louis Co.;

Mo.—Edgar Stephens Constr. Co., Cairo, Ill. LB **$88,-772.** (3 bidders) c. conc. 0.66 mi. Dunklin Co.;

Mo.—Landy Constr. Co., 502 Seneca St., St. Joseph, Mo. LB **$485,521.** (4 bidders) wid'n., b. conc. 13.708 mi. Harrison Co.;

Mo.—Masters Jackson Paving Co., 1850 E. Sunshine St., Springfield, Mo. LB **$277,971.** (10 bidders) wid'n., b. conc. 8.688 mi. Dallas Co.; LB **$299,559.** (10 bidders) wid'n., b. conc. 9.956 mi. Greene Co.;

Mo.—Steinhoff-Kirkwood Joiner, Cape Girardeau, Mo. LB **$347,951.** (4 bidders) rolled stone base, bit. mat. surf. 11.768 mi. New Madrid Co.;

Mo.—Quarry Realty Co., Trinidad Asphalt Mfg. Co., 4030 Chouteau Ave., St. Louis, Mo. LB **$375,027.** (7 bidders) wid'n., b. conc. 13.02 mi. Audrain Co.;

Mo.—Union Constr. Co., 1401 Fairfax Trafficway, Kansas City, Kan. LB **$362,661** (12 bidders) wid'n., b. conc. 11.84 mi. Pettis Co.; LB **$294,722** (10 bidders) b. conc. 9.831 mi. Dallas Co.; LB **$191,553** (12 bidders) b. conc. resurf. 12.655 mi. Morgan Co.; LB **$99,693** (10 bidders) wid'n., b. conc. 3.381 mi. Hickory Co. Bids Jan. 5. CD 12/14.

▲ **MISSOURI**—State Hy. Dpt., Jefferson City,

Mo.—Fruin-Colnon Constr. Co., Inc., 1706 Olive St., St. Louis, Mo. LB **$121,726** (4 bidders) one 60 ft., two 44 ft. continuous concrete girder spans, St. Louis Co.;

Mo.—Universal Bridge Co., Inc., 424 Scarritt Bldg., Kansas City, Kan. LB **$260,432** (8 bidders) two 125 ft., two 105 ft., two 66 ft., continuous plate girder spans Sta. 318 plus 17, Newton Co.; LB **$261,384** (8 bidders) two 125 ft., two 105 ft., two 66 ft., continuous plate girder spans Sta. 317 plus 93, Newton Co.;

Mo.—Samuel Kraus Co., and Auxvasse Stone & Gravel Co., 649 Edmund St., St. Louis, Mo. LB **$1,416,708** (4 bidders) 14 continuous plate girder spans 1,391 ft. total length, St. Louis Co.; LB **$89,549** (4 bidders) one 76 ft., I-beam composite span, St. Louis Co.;

Mo.—S. J. Groves & Sons, Inc., 500 Wesley Temple Bldg., Minneapolis, Minn. LB **$309,145** (7 bidders) two 150 ft., two 120 ft., one 57 ft., one 67 ft., steel plate girder spans, Laclede Co.; LB **$87,367** (7 bidders) one 75 ft., two 60 ft., I-beam spans, Laclede Co.;

Mo.—Mary Constr. Co., Inc., P.O. Box 423, Cape Girardeau, Mo. LB **$88,188** (4 bidders) 54 ft. concrete rigid frame concrete abutments, St. Louis Co. Bids Jan. 5. CD 12/14.

▲ **KANSAS**—State Hy. Comn., Topeka,

Kan.—M. W. Watson, National Bank of Topeka Bldg., Topeka, Kan. CA **$548,973** (4 bidders) c. conc. 0.471 mi., Proj. 54-87 U 038-3 (14), Sedgwick Co.;

Kan.—Geo. M. Myers, Inc., El Dorado, Kan. CA **$75,767** (3 bidders), c. conc., b. conc. 0.283 mi. Proj. 77-18 U 055-1 (1) Part I, Cowley Co.; CA **$141,205** (3 bidders) c. conc., b. conc. 0.698 mi. Proj. 77-18 U 055-1, Part II, Cowley Co.;

Kan.—Harry Henery, Inc., Ottawa, Kan. CA **$92,538** (8 bidders) grading 12.037 mi., Proj. 83-41 F 017-1 (10), Haskell Co.;

Kan.—Mosbarger & Ems Constr. Co., Araphoe, Neb. CA **$119,992** (8 bidders) grading 15.426 mi. Proj. 96-36 F 066-1 (4), Greeley Co.;

Kan.—Ira Van Buskirk & Sons, Hawarden, Iowa CA **$162,863** (11 bidders) grading 5.713 mi. Proj. 75-70 F 063-3 (6), Osage Co.;

Kan.—Freeto Constr. Co., Inc., Pittsburg, Kan. CA **$113,434** (2 bidders) c. conc., b. conc. 0.579 mi. Proj. 160-50 U 018-6 (6), Labette Co., CA **$362,243** (2 bidders) grading 7.329 mi. Proj. 6919 F 083-1 (5), Part I, Crawford Co.;

Kan.—Inland Constr. Co., 3867 Leavenworth St., Omaha, Neb. CA **$75,379.** (2 bidders) c. conc. 0.444 mi. Proj. 83-28 F 017-1 (11) Part II, Finney Co.;

Kan.—E. W. Geiger, Inc., P. O. Box 799, Topeka, Kan. CA **$115,095** (8 bidders) grading 4.716 mi. Proj. 4-27 S 969 (9), Ellsworth Co.; CA **$146,579** (18 bidders) grading 10.395 mi. and 0.185 mi., Proj. 42-48 S 978 (9) Part I and II, Kingman Co.;

Kan.—Kaw Paving Co., Inc., P. O. Box 329, Topeka, Kan. CA **$175,840** (9 bidders) b. conc. 6.333 mi. Proj. 36-66 F 092-4 (6) Nemaha Co.;

Kan.—Koss Constr. Co., Farm Bureau Bldg., Des Moines, Iowa. CA **$997,808** (6 bidders) c. conc. 7.96 mi. Proj. 40-89 IN 01-5 (20), Shawnee Co. Grand total $3,127,716. Bids Dec. 29. CD 12/16.

Brown & Root, Inc., Box 3, Houston, Tex., CA **$745,-370,** est. $1,175,000 (7 bidders) substructure and fenders for Ship Channel Lift Bridge at Savage Lane, CORPUS CHRISTI, TEX. Nueces Co. and Nueces County Navigation Dist. and City of Corpus Christi, City Hall, Corpus Christi, Tex. Bids Dec. 7. CD 1/9, under LB.

BUILDINGS—LB & CA

▲ **F. A. DePuydt,** 660 Ronwood Dr., Des Moines, Iowa, Owner Builds, **$3,500,000,** Parkfair SHOPPING CENTER, Hickman Rd. and 73 St., DES MOINES, IOWA.

▲ **W. Franklin Turner,** Burneyville, Okla. Own Forces. **$750,000,** LODGE, GUEST HOUSES, RECEPTION CENTER; **$275,000,** 18-hole golf course; **$90,000,** water supply; **$100,000,** earthwork, grading, drainage in 600-acre tract; **$85,000,** rein.-con. swimming pool, tract labeled "Sports Paradise", BURNEYVILLE, OKLA. Grand total $1,300,000. CD 12/28.

▲ **Larry T. Brooks,** 6314 E. 15 St., Tulsa, Okla., CA Est. **$1,000,000.** industrial PLANT, TULSA, OKLA, W. C. Norris Mfg. Co., 51st and West Ave., Tulsa, Okla. Awarded Jan. 4. CD 12/22.

▲ **Northrop Aircraft, Inc.,** 1001 E. Broadway, Hawthorne Calif., cancelled bids, aircraft mfg. PLANT unit. EL PASO, TEX. **$1,000,000.** CD 9/6.

W. S. Bellows Constr. Corp., 716 N. Everton St., Houston, Tex., CA **$69,125,** site area open drainage, grading, earthwork, leveling, PASADENA, TEX. Sears Roebuck & Co., 4207 Main St., Houston, Tex. Bids Dec. 20. CD 12/1.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
January 26 Nevada February 1, 2, 8 California

▲ **Wash., Seattle**—BA 2/7—City, P. R. Hendricks, city purch. agt., County-City Bldg., Zone 4, 2 hoists and controls and accessories for outlet gates, Gorge High Dam. P. J. Raver, City Light Bldg., city light supt. CD 4/16/54.

HEAVY CONSTRUCTION—LB & CA

▲ † **Morrison-Knudsen Co., Inc.,** 319 Broadway, Boise, Idaho, LB, **$1,340,725,** est. $1,305,045 (2 bidders), runway and taxiway extensions, Mountain Home Air Force Base, ENG-56-20, MOUNTAIN HOME, IDAHO. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Jan. 10. CD 12/7.

▲ † **A. Teichert & Son Inc.,** Box 928, Sacramento, Calif., LB, **$1,147,921,** earthwork, concrete lining structures for 6.2 mi. Putah South Canal, near Winters, Solano Co., DC 4555, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Winters, Calif. Bids Jan. 5. CD 12/23.

▲† **A. Teichert & Son,** 1931 Stockton Blvd., Sacramento, Calif., CA **$700,000,** repairing Feather River levee break, Nicolaus, Sutter Co., Awarded Jan. 2; CA **$350,000,** repairing Feather River levee break, Nicolaus, Sutter Co., CALIFORNIA. U. S. Eng., 1209 8 St., Sacramento, Calif. Grand total $1,750,000; **San Francisco Bridge Co.,** 140 Montgomery St., San Francisco, Calif., CA **$400,000.** repairing levee break in Empire Tract on San Joaquin River northwest of Stockton, Awarded Jan. 5, (California); **Olympian Dredging Co.,** 525 Market St., San Francisco, Calif., CA **$300,000,** repairing levee break at Quimby Island, west of Stockton, San Joaquin Co., (California). Awarded Jan. 5.

BUILDINGS—LB & CA

† **C. H. Elle Constr. Co. & Vitt Constr. Co. Inc.,** 2501 S. State St., Salt Lake City, Utah, CA **$658,132.** 44 HOUSING units, concrete block, wood frame, Dugway Proving Ground, ENG-56-30, TOOELE, UTAH. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Dec. 19, awarded Jan. 6. CD 1/4, under LB.

Wes Meyer Constr. Co., 4220 S. 16 St., Phoenix, Ariz., CA. **$957,565,** 77,000 sq. ft., concrete block, general OFFICE and ADMINISTRATION BLDG., TEMPE, ARIZ. Salt River Valley Water Users Assn., 145 W. Van Buren St., Phoenix, Ariz. Kemper Goodwin, 115 E. 5 St., Tempe, Ariz., archt. Awarded Jan. 6.

▲ † **Fanderlik-Locke Co. & Myers Bros.,** Olympic Hotel, Seattle 1, Wash., CA **$2,745,735,** 10 brick and frame HOUSES, 10 quadruplexes for officers' housing, 20 bldgs. to house enlisted men, FORT LEWIS, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Dec. 15. CD 12/20, under LB.

▲ **Andersen-Westfall Co.,** 2470 N.W. Nicolai St., Portland, Ore., CA **$1,000,000.** container mfg. PLANT, NORTH SALEM, ORE. American Can Co., 100 Park Ave., New York, N. Y. CD 1/11.

▲ **Larwin Co.,** 8692 Wilshire Blvd., Beverly Hills, Calif., CA, **$1,075,200,** 118 frame, stucco DWELLINGS, Triad St., Ramsey and Mausa Dr., BELLFLOWER, CALIF. Parkwood Homes, Inc., Woodland Homes, Inc., etc., 8692 Wilshire Blvd., Beverly Hills, Calif.

▲† **M. H. Golden Constr. Co.,** 3485 Noell St., San Diego, Calif., CA, **$1,258,000.** enlisted mens barracks, 2nd increment, Naval Amphibious Base, NOY 90803, Spec. 49480, CORONADO, CALIF. Eleventh Naval Dist., Dpt. Navy, San Diego, Calif. Bids Dec. 20. CD 12/28, under LB.

Smith-Campbell Co., 6510 Cherry Ave., Long Beach, Calif., CA, **$798,400,** West Junior HIGH SCHOOL 11985 S. Old River School Rd., DOWNEY, CALIF. Downey Union High School Dist., 8521 E. Firestone Blvd., Downey, Calif. Bids Dec. 8, awarded Jan. 4. CD 12/21, under LB.

▲ **Rim of the World School Dist.,** Lake Arrowhead, Calif., rejected bids Dec. 6, HIGH SCHOOL and ELEMENTARY SCHOOL addn., LAKE ARROWHEAD, CALIF. LB **$1,091,000.** CD 12/13, under LB.

▲ **Williams & Burrows Constr. Co.,** 500 Harbor Blvd., Belmont, Calif., LB, **$1,127,275** (11 bidders), WAREHOUSE and OFFICE, RICHMOND, CALIF. United Grocers Ltd., 685 6 St., San Francisco, Calif. Bids Jan. 6. CD 12/16.

▲ **Cahill Brothers,** 340 Sansome St., San Francisco, Calif., CA, **$1,000,000,** remodeling BANK, SAN FRANCISCO, CALIF. First Western Bank & Trust Co., 405 Montgomery St., San Francisco, Calif. Loubet & Glynn, 400 Montgomery St., San Francisco, Calif., archts. Awarded Jan. 6.

M. J. Brock & Sons, Inc., 2894 Rowena Ave., Los Angeles 39, Calif., CA **$698,630,** general contract, 3 ward bldgs., Pacific State HOSPITAL, SPADRA, CALIF. State Div. Architecture, 1100 N St., Sacramento, Calif. Bids Dec. 21, awarded Jan. 6. CD 1/3, under LB.

Kemp Brothers, 8750 Mettler St., Los Angeles, Calif., LB, **$826,300,** est. $783,000, Santa Fe HIGH SCHOOL, Santa Fe Springs, WHITTIER, CALIF. Whittier Union High School Dist., 610 W. Philadelphia St., Whittier, Calif. Bids Jan. 4. CD 12/7, under LB.

CANADA

BUILDINGS—BA

▲ **Ont., Petawawa**—ADMINISTRATION, etc.—BA 1/31—Defence Constr. Ltd., 56 Lyon St., Ottawa, administration bldg., 2 officers' quarters, 2 officers' mess, 2 junior rank clubs, guard house and outside services, Army Camp. $1,600,000. Plans deposit $100. CD 12/15/54.

▲ **Ont., London**—MARKET, etc.—BA 2/7—Covent Garden Market Parking Building, Joseph Jeffery, pres., 181 King St., 196x400 ft., rein.-con. building and parking. $1,500,000. S. G. Chipman & Co., 234 Queens Ave., engrs. CD 1/28/54.

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.

Mannix Co. Ltd., 332 7th Ave. W., Calgary, Alta., CA **$2,649,628.** grading, culverts, base course along Trans-Canada Hy., Mile 21 to Mile 28.6 at Trail. Awarded Dec. 20.

BUILDINGS—LB & CA

▲ **Bennett & White Constr. Co.,** 660 Howe St. Vancouver, B. C., LB **$1,468,396,** 2 story, rein.-con. Killarney Secondary SCHOOL, 49 and Killarney Sts., VANCOUVER, B. C. Vancouver School Bldg., 1595 W. 10 Ave., Vancouver, B. C. Bids Dec. 29. CD 11/30.

▲ **Dominion Constr. Co. Ltd.,** 195 W. 2 Ave. Vancouver, B. C. Owner Builds, **$1,000,000** 8 story rein.-con., aluminum and glass OFFICE, 1100 Block W. Georgia St., VANCOUVER, B. C. Awarded Jan. 4.

ALASKA

HEAVY CONSTRUCTION—BA

† **Alaska**—BA 2/7—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., constr., imprv. small-boat harbors at Petersburg, Wrangell and Metlakatla, CIVENG-56-1. $800,000. CD 8/24.

HEAVY CONSTRUCTION—LB & CA

▲† **Baker & Ford,** Mason Bldg., Bellingham, Wash. CA **$3,418,110.** est. $3,034,532, Schedule A, five 27,000 sq. ft. nose-wing hangars, Inv. 56-3, Elmendorf Air Force Base, ALASKA. Grand total $7,522,210. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Dec. 20. CD 12/30, under LB;

Lease Co., Inc. and Puget Sound Bridge & Dredging Co., 2929 16 Ave. S. W., Seattle, Wash., CA **$515,-600,** est. $462,079, Schedule B and K, communications and electronics bldg. with utilities and deep well pumphouse, Inv. 56-3 (Alaska);

Kuney-Johnson Co., 1266 Mercer St., Seattle, Wash., CA **$895,000,** est. $889,155, Schedule C, airmen's dining hall with utilities, CA **$1,583,500,** est. $1,458,541, Schedules D, F and H, officers' quarters, dining hall, nurses bldg., and dental clinic with utilities, Inv. 56-3 (Alaska);

S. Birch & Sons and Green Constr. Co., Central Bldg., Seattle Wash. CA **$1,110,000,** est. $1,013,097, Schedules J and E, utilities to serve Area "A", hardstands and potable water mains, Inv. 56-3, (Alaska).

(Proposal Advertisements see p. 115 to 117)

Cut down man hours! Speed up hole drilling!

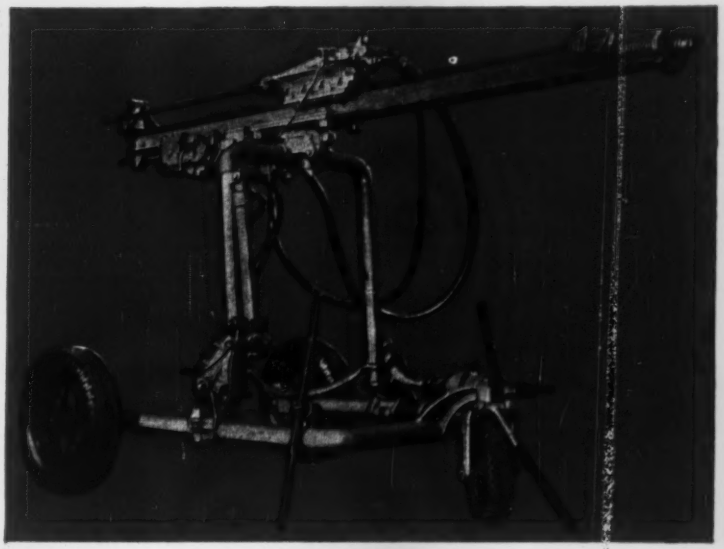
2 new more powerful Thor wagon drills!

General purpose SW-1 • Heavy duty BW-2

Now Thor offers two new wagon drills to fit every drilling requirement — wagon drills which will outperform and out-last other models. Drill holes in any direction, at any angle, on level or sloped ground. One man operation cuts costly man hours. Check these features on the new heavy duty BW-2 and the general purpose SW-1 and then call your Thor contractors tool distributor for a free trial of the model that fits your job.

THOR SW-1

Compact size—3 wheel reinforced rig • Weight with model 75 drifter—768 lbs. • 2 handle controls movable along mast • Handles up to 3½" bore drifter • New centralizer swings out of way for close drilling • Mast swings 360° vertical or horizontal • Wet or dry operation



THOR BW-2

5 h.p. rotary air motor • 3 wheel reinforced heavy-duty rig • Variable speed control • Motor and controls movable along mast • Wet or dry operation • Mast swings 360° vertical and horizontal • New centralizer swings out of way for close drilling • 800 to 1000 lbs. pulling power for steel removal • Spring buffer prevents chain breakage • Equipped with Thor 105 drifter. (4" bore)

Thor PORTABLE POWER TOOLS

THOR POWER TOOL COMPANY, AURORA, ILL.

Atlanta	Chicago	Detroit	Newark	St. Louis	Export Division,
Birmingham	Cincinnati	Houston	Long Island City, N.Y.	San Francisco	New York City
Boston	Cleveland	Los Angeles	Philadelphia	Seattle	
Buffalo	Denver	Milwaukee	Pittsburgh	Toronto Canada	

IF IT'S A

WET JOB

PLAY SAFE! ASK FOR A DEWATERING ANALYSIS BY

GRIFFIN

WELLPOINT CORP.

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Hammond, Ind. Houston, Tex. Jacksonville, Fla.

WRITE TODAY AND SEE how you can have Power-Steering for your PRESENT EQUIPMENT

POWR-STEER

Now you can have the economy, efficiency and safety of power steering **without investing in new capital equipment.** Behlen Powr Steer is easily installed on many models of your present tractors, motor graders, etc.—saves time on the job and therefore cuts your labor costs. Cuts time lost and other expense because of wrenched backs, broken arms. Heavy duty design provides effortless turning and steering on the toughest jobs.

FILL IN THIS COUPON TODAY!

Behlen Mfg. Co. Columbus, Nebraska
Send me complete Information about Behlen Powr Steer for my equipment. Dept. 28

NAME:_____

ADDRESS:_____

CITY:_____ STATE:_____

Huntsville, Alabama Water Works to Cost $3 Million

Bids were taken two ways on the $2,960,019 water works improvements for the City of Huntsville Utilities.

One alternate called for a complete "lock-and-key" job in two parts, to furnish and install 9½ miles of water distribution piping, valves, fire hydrants and other equipment. This proved to be $123,976 higher than the other alternate in which five separate contracts shown below total $2,650,898.

In addition, five 150,000 to 2,000,000-gallon steel reservoirs with foundations also drew alternate bids. Those with cone type roofs will cost $309,121, about $16,000 below the alternate for umbrella type roofs.

J. W. Goodwin Engineers, Inc., Birmingham, Ala., are consulting engineers. Ernest H. Hamilton, Jr. is engineer for the City of Huntsville Utilities.

The engineers expect excessive amounts of rock to be encountered on the job. Unusual equipment used for the work includes a two-way radio system.

The bidders are:

Contract No. 1, Proposal B: Furnish cast iron pipe

1C McWane Cast Iron Pipe Co., Birmingham, Ala $757,578
2 U. S. Pipe & Foundry Co., Birmingham, Ala. $762,727
4 National Cast Iron Pipe, Birmingham, Ala $788,575

Bids: 11-22-55 Items:	Unit	Quantity	Unit Prices 1C	2
CIP, 6"	lf	288,330	$1.58	$1.59
8"	lf	40,290	2.23	2.25
12"	lf	51,540	3.74	3.765
6", CI 250	lf	5,440	1.67	1.685
8", CI 250	lf	4,470	2.31	2.33

Proposal C: Furnish cast iron pipe

1C U. S. Pipe & Foundry Co $742,083
2 American Cast Iron Pipe, Birmingham, Ala $748,860
3 National Cast Iron Pipe $757,816

CIP, 14"	lf	1,130	$4.75	$4.81
16"	lf	14,100	5.605	5.66
18"	lf	98,900	6.65	6.71

Proposal D: Furnish valves, fire hydrants & accessories

1C M & E Valve & Fittings Co., Anniston, Ala $161,924
2 Mueller Co., Chattanooga, Tenn $168,410
4 The Ludlow Valve Mfg. Co. Inc., Troy, N. Y. $177,898

Valves & boxes, 6"	ea	430	$64.02	$65.52
8"	ea	21	94.88	97.08
12"	ea	31	187.40	191.02
Valves, 14"	ea	1	592.96	601.40
16"	ea	4	735.80	788.95
18"	ea	26	920.45	981.18
Fire hydrants	ea	438	135.44	135.36
Tapp cross, 6x6", w 2 6" valves	ea	4	168.81	187.85
sleev, 6x8" valv, 6"	ea	14	105.14	114.65
6x12", valv, 6"	ea	34	124.30	133.81
6x20", valv, 6"	ea	1	174.89	184.43
sleev & valv, 4"	ea	138	65.25	74.78
6"	ea	191	98.45	107.97
8"	ea	7	135.89	146.13
10"	ea	1	219.15	230.76
12"	ea	18	281.19	294.06

Proposal E: Install distribution system except on Monte Sano

1C Southeastern Contracting Co. $951,131
2 C. O. Osborn Cont. Co., Birmingham, Ala $970,985
11 Bush Building Co $2,061,501

CIP, 6"	lf	288,330	$0.69	$0.84
8"	lf	40,290	0.77	0.90
12"	lf	51,540	0.91	1.00
14"	lf	1,130	1.11	1.40
16"	lf	14,100	1.35	1.61
18"	lf	98,900	1.68	1.74

Bids: 11-22-55 Items:	Unit	Quantity	Unit Prices 1C	2
CIP, 6", CI 250	lf	5,440	0.70	0.89
8", CI 250	lf	4,470	0.78	1.03
Pipe, encasement, 18", f&i	lf	1,835	13.00	10.00
24"	lf	440	17.00	13.50
30"	lf	703	27.00	16.75
Fittings, CI, f&i	ton	150	550.00	520.00
Valves & boxes, 6"	ea	430	10.00	8.00
8"	ea	21	15.00	13.00
12"	ea	31	22.00	15.00
Valv, 14"	ea	1	30.00	15.00
16"	ea	4	50.00	20.00
18"	ea	26	75.00	20.00
box, type A, f&i	ea	1	948.00	410.00
type B	ea	4	999.00	530.00
type C	ea	26	1,109	500.00
Fire hydrants	ea	438	22.00	24.00
Wet connection, 2", f&i	ea	1	100.00	140.00
Tapp cross, 6x6", w 2 6" valves,	ea	4	65.00	90.00
sleev, 6x8", valv, 6"	ea	14	60.00	75.00
6x12", valv, 6"	ea	34	80.00	150.00
6x20", valv, 6"	ea	1	120.00	240.00
sleev & valv, 4"	ea	138	45.00	45.00
6"	ea	191	55.00	60.00
8"	ea	7	60.00	80.00
10"	ea	1	85.00	140.00
12"	ea	18	70.00	130.00
Main taps, f&i	ea	2,000	5.50	4.69
Service pipe, galv iron 3/4" f&i	lf	75,000	0.55	0.70
Curb stops, 3/4", f&i	ea	1,800	4.00	3.75
Service installations, f&i	ea	200	16.00	12.00
House connections, f&i	ea	200	11.00	6.00
Remov & replace pavmt	sy	20,000	5.50	5.00
Rock in trenches	cy	14,000	6.50	6.00
Backfill, special	cy	2,500	4.50	3.50

Proposal G: Install Monte Sano Water System

1C L. F. Wilder Contractors, Center Point, Ala. $38,182
2 C. O. Osborn Contracting Co $40,844
9 Bush Building Co $78,270

CIP, 6"	lf	30,880	$0.72	$0.80
CI 250	lf	4,080	1.05	0.88
Fittings, CI, f&i	ton	3	650.00	550.00
Valv & box, 6"	ea	34	12.00	10.00
Service pipe, galv iron, 3/4", f&i	lf	4,000	0.57	0.85
Main taps, f&i	ea	170	4.60	5.00
Service installations, f&i	ea	170	18.20	13.00
Remov & replace pavmt	sy	100	6.50	6.00
Rock in trenches	cy	250	10.00	14.00

Contract No. 2: Construct tank foundations

1C Bush Building Co $109,721
2 Watkins Constr. Co., Gadsden, Ala $113,259
5 P. A. Buchanan Contr. Co., Birmingham, Ala. $146,381

Lee Highway

Excav, unclassified	cy	653	$6.00	$6.00
Conc, reinf	cy	70	131.50	135.00
Yard piping	ls	job	13,665	10,037

Pulaski Pike

Excav, unclassified	cy	3,020	1.00	2.50
Conc, reinforced	cy	46	106.00	135.00
Yard piping	ls	job	13,116	10,963

Whitesburg Drive

Excav, unclassified	cy	1,712	6.00	8.50
Conc, reinf	cy	72	130.00	135.00
Yard piping	ls	job	18,756	10,757

Big Cove Area

Excav, unclassified	cy	604	6.00	8.50
Conc, reinf	cy	46	85.00	135.00
Yard piping	ls	job	6,612	6,138

Monte Sano

Excav, unclassified	cy	183	4.00	9.50
Conc, reinf	cy	50	83.00	135.00
Yard piping	ls	job	4,505	4,133

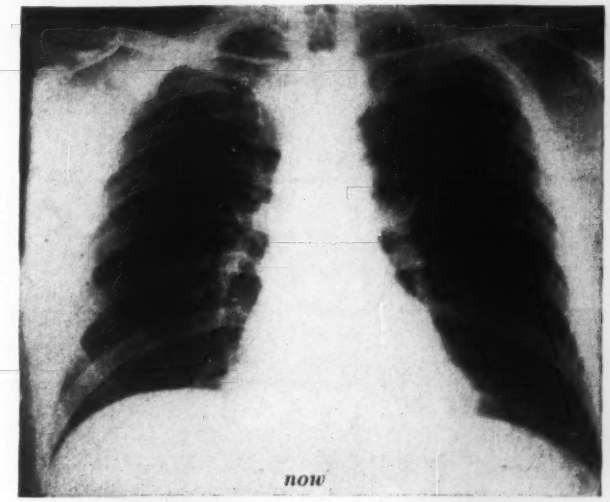
Contract No. 3: Fabricate, erect, paint & sterilize steel reservoir

1C Hammond Iron Works, Warren, Pa $199,400
2 Chicago Bridge & Iron Co., Atlanta, Ga $204,200

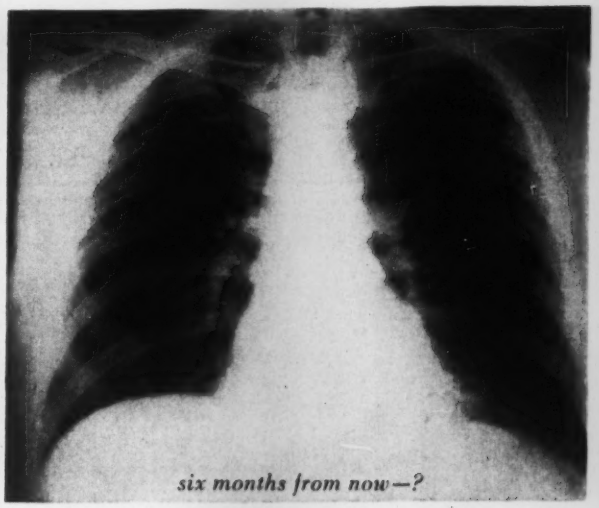
Storage reservoir, stl, 150,000 gal elevated	ea	1	$31,600	$32,300
500,000 gal, umbrella type roof	*ea	1	18,470	19,200
cone type roof	ea	1	17,200	17,400
2,000,000 gal, umbrella type roof	*ea	3	55,100	55,600
cone type roof	ea	3	50,200	51,500

** Total of Contract No. 3 with umbrella type roofs: 1 $215,370 and 2 $218,300

Time allowed: 385 calendar days



now



six months from now—?

TWICE A YEAR

MEN OVER 45!...Lung cancer, in men of your age, has increased so alarmingly in recent years that our doctors strongly recommend that you make a habit of having *two* chest x-rays every year: one, when you get your annual medical checkup; the other six months later.

Today, you are six times more likely to develop lung cancer than a man of your age twenty years ago. Our doctors still don't know *why* you are, but they *do* know that their chances of saving your life could be as much as ten times greater if they could only detect lung cancer "before it talks"...before you notice any symptoms whatsoever in yourself.

That's why we urge you and every man over forty-five to make semiannual chest x-rays a habit —for *life*.

To see our lifesaving film, "The Warning Shadow," call the American Cancer Society office nearest you or simply write to "Cancer" in care of your local Post Office.

American Cancer Society

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Jan. 26—Clay Products, Lime, Paint, Roofing, Plaster
- Feb 2—Wage Rates, Building Board, Lath, Insulation
- Feb. 9—Cement, Aggregate, Ready-Mixed Concrete, Asphalt
- Feb. 16—Iron and Steel Products, Pipe

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)
All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft.
(Prices in italics)

		1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	†	**$78.00**	**$80.00**	**$75.50**	**$74.00**	**$77.50**	**$81.00**	**$79.00**	.....	.....
Baltimore	*	**90.00**	**95.00**	**96.00**	**97.00**	**97.00**	**100.00**	**110.00**	.....	.....
		110.00g	*110.00g*	*125.00g*	*125.00g*	*125.00g*	*125.00g*	*130.00g*	*$140.00*	*$140.00*
Birmingham	†	**81.50**	**83.50**	**80.50**	**87.50**	**90.50**	**95.50**	**100.50**	.....	.....
		105.00	*105.00*	*108.50*	*108.50*	*108.50*	*105.00*	*105.00*	*105.00*	*105.00*
Boston	a	**105.00**a	**113.00**a	**105.00**a	**105.00**a	**105.00**a	**106.00**a	.....	.....	.....
		95.00n	*95.00n*	*127.00*	*127.00*	*127.00*	*127.00*	*127.00*	*130.00*	*130.00*
Chicago	**	**96.00**	**99.00**	**92.00**	**107.00**	**115.00**	**116.00**	**111.00**	.....	.....
		102.00	*102.00*	*114.00*	*115.00*	*115.00*	*114.00*	*122.00*	*122.00*	*122.00*
Cincinnati	*	**93.75**	**94.75**	**83.00**	**90.50**	**94.75**	**103.00**	**110.50**	.....	.....
		101.75	*104.00*	*113.50*	*115.00*	*116.50*	*116.75*	*140.00*	*140.00*	*140.00*
Cleveland	**	**96.00**	**98.00**	**98.00**	**102.00**	**102.00**	**103.00**	.....	.....	.....
		.....	.....	*114.00*	*108.00*	*108.00*	*109.00*	*151.00*	*151.00*	*151.00*
Dallas	k‡	**75.00**	**80.00**	**72.00**	**70.00**	**70.00**	**65.00**	**130.00**	.....	.....
Denver	*	*Not in stock*		*118.75*	*119.75*	*119.75*	*120.75*	*125.00*	*150.00*	*150.00*
Detroit	‡	**115.00**	**118.00**	**108.00**	**115.00**	**118.00**	**118.00**	.....	.....	.....
		125.00	*125.00*	*135.00*	*130.00*	*130.00*	*130.00*	*175.00*	*185.00*	*185.00*
Kansas City	*	**130.00**	**130.00**	**125.00**	**130.00**	**135.00**	**145.00**	.....	.....	.....
		140.00	*140.00*	*150.00*	*144.00*	*144.00*	*148.00*	*185.00*	*185.00*	*210.00*
Los Angeles	i	*108.00*	*108.00*	*108.00*	*108.00*	*108.00*	*108.00*	*150.00*	*140.00*	*150.00*
Minneapolis	g	*125.00*	*125.00*	*150.00*	*150.00*	*140.00*	*140.00*	*175.00*	*175.00*	*175.00*
Montreal	ab	**92.00**	**100.00**	**92.00**	**92.00**	**110.00**	**125.00**	.....	.....	.....
		170.00	*170.00*	*170.00*	*170.00*	*170.00*	*170.00*	*142.00*	*142.00*	*142.00*
New Orleans	†	**102.00**	**102.00**	**94.50**	**87.00**	**92.00**	**96.00**	**120.50**	.....	.....
	†	*121.50*	*121.50*	*126.00*	*121.50*	*121.50*	*121.50*	*144.00*	*144.00*	*144.00*
New York	b	**112.50**	**115.50**	**122.50**	**127.50**	**127.50**	**127.50**	**167.50**	.....	.....
		.....	.....	*126.00*	*126.00*	*126.00*	*126.00*	*160/170*	*165/175*	*165/175*
Philadelphia	‡	Range from $117.00 to $137.00					**117/137**	**117/137**	.....	.....
		Range from $151.00 to $168.00					*151/163*	*158/158*	*158.00*	*158.00*
Pittsburgh	†	**110.00**	**110.00**	**110.00**	**110.00**	**110.00**	**110.00**	**123.00**	.....	.....
		127.00	*127.00*	*135.00*	*135.00*	*138.00*	*138.00*	*130.00*	*145.00*	*145.00*
St. Louis	g	**121.00**	**123.00**	**127.00**d	**132.00**d	**132.00**c	**133.00**c	.....	.....	.....
		.....	.....	*131/134*	*135.00e*	*135.00e*	*136.00e*	*190.00e*	*190.00*	*180/185*
San Francisco	A	*82.50*	*82.50*	*92.50*	*92.50*	*92.50*	*92.50*	*108.00*	*131.00*	*146.00*
Seattle	†	*78.00*	*78.00*	*78.00*	*78.00*	*78.00*	*78.00*	*90.00*	*97.00*	*97.00*
Toronto	a	**97.00**	**100.00**	**95.00**	**93.00**	**95.00**	**95.00**	**107.00**	.....	.....
		105.00	*108.00*	*122.00*	*122.00*	*122.00*	*125.00*	*140.00*	*138.00*	*138.00*

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. e Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd., truckload lots, 5/8 Mfdbm

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. °a Spruce. °b Tax exempt. °c 5M lots. °d 8, 10, & 12 ft. lengths. °e 8 to 16 ft. lengths. °g No. 1 common. °i 8ft. lengths. °k No. 3 common. °n #3. A incl rail rate from North west mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

LONG LEAF Y. P.

Merchantable grade up to 20 ft.

	2x12 Rgh	12x12 Rgh
	.....	.....
	$170.00	$185.00
	115.00	160.00
	.....	.....
	.....	.....
	.....	.....
	139.00	139.00
	.....	.....
	131.75	131.75
	.....	.....
	.....	.....
	.....	.....
	128.00	128.00
	.....	.....
	.....	.....
	.....	.....
	.....	.....
	152.00	150.00
	.....	.....
	255/275	255/275
	214/224	214/224
	120.00	130.00
	.....	.....
	.....	.....
	.....	.....
	.....	.....
	104.00	.....
	.....	.....

PLYWOOD

Rail freight increment (See note for base price)

	¼"	¾"
	$22.32	$27.24
	25.92	31.60
	.....	.....
	21.78	26.58
	.....	.....
	25.92	31.60
	.....	.....
	22.45	27.37
	.....	.....
	25.00	30.48
	.....	.....
	25.37	30.93
	.....	.....
	18.72	22.80
	13.92	16.98
	25.00	30.48
	.....	.....
	16.56	20.16
	.....	.....
	16.61ab	20.25ab
	19.89	24.25
	.....	.....
	.....	.....
	18.72	22.80
	.....	.....
	.....	.....
	25.92	31.60
	.....	.....
	25.92	31.60
	.....	.....
	25.92	31.60
	.....	.....
	18.72	22.80
	.....	.....
	12.22	14.91a
	.....	.....
	.....	.....
	.....	.....

PLYWOOD: Interior Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¾", $179.00; on ¼", $201.00. Exterior ¾", $199.00, ¼", $223.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. °a Lower rate by water shipment. °b 50,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

WINDOW GLASS

Discounts from jobbers list, Feb. 1, 1950a

	Single or Double Thickness A quality	B quality
Atlanta	79%	80%
Baltimore	74%d	76%d
Birmingham	82%	83%
Boston	72-10%	72-10%
Chicago	74%	74%
Cincinnati	74%	74%
Cleveland	74-10-10%	74-10-10%
Dallas	78%	78%
Denver	73%	73%
Detroit	74-10-10%	74-10-10%
Kansas City	76-10%	76-10%
Los Angeles	71%	78%
Minneapolis	73-10%	73-10%
Montreal	40-10-5%bc	40-10-5%b
New Orleans	78%	79%
New York	80%	80%
Philadelphia	77%	79%
Pittsburgh	78%	78%
St. Louis	76-10%	76-10%
San Francisco	61%	69%
Seattle	68%	71%

Glass: °a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, da, $60.00 for A quality, $52.75 for B quality. °b Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. °c Single thickness. °d Discount 6/18/52. °e Discount eff. 12/31/54.

EXPLOSIVES

Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*

Atlanta	$0.2465
Baltimore	.2465
Birmingham	.1915
Boston	.2465
Chicago	.2465
Cincinnati	.2465
Cleveland	.2865
Dallas	.2540
Denver	.2515
Detroit	.2465
Kansas City	.2515
Los Angeles	.2490
Minneapolis	.2515
Montreal	22.05h
New Orleans	.2515
New York	.4125g
Philadelphia	.2465
Pittsburgh	.2465
St. Louis	.2515
San Francisco	.2465
Seattle	.2490

Price of 60% Ammonia Gelatin is $0.15 per lb. higher in U. S. $1.75 per 100 lbs. higher in Canada.

Explosives: * Cartridges of 1¼", 1½", 1¾", 2", 2¼", 2½", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. °g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. °h F.o.b Beloeil (near Montreal), per 100 lb. forcite, 40% Forcite 60%, $23.80

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.1915	$0.2265	$0.2465
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.1965	.2315	.2515
Rocky Mtn. States	.1965	.2315	.2515
Pacific N. W. States	.1940	.2290	.2490
Pacific S. W. States	.1915	.2265	.2465

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	....
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.78/.88	.93
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in.—2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in.—2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:

		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.60	" 3a 1.70	2.78
Chicago	Red Oak		3.45a		4.30a
New York	S. L. Sap Pine	2.00	4.00	3.00	5.00
	Mixed Oak	2.50	4.50	3.50	5.50
Philadelphia	Red Oak	2.95/3.70	4.50/5.75	3.58/3.90	5.50/5.75
St. Louis	White Oak	2.50		2.80	
	Red Oak	2.40	2.95a	2.65	3.30a
	Sap Pine or Cypress		2.85a		3.25a
San Francisco	Douglas Fir	2.25ef	3.10ef	3.25ef	4.75aef

Tr.—Treated; Untr.—Untreated. a Creosoted. b 7" x 9" x 8'. c Empty cell. e Green. f f.o.b. cars. * Add 75¢/tie freight charge to Birmingham.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.103
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	29.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	14.90

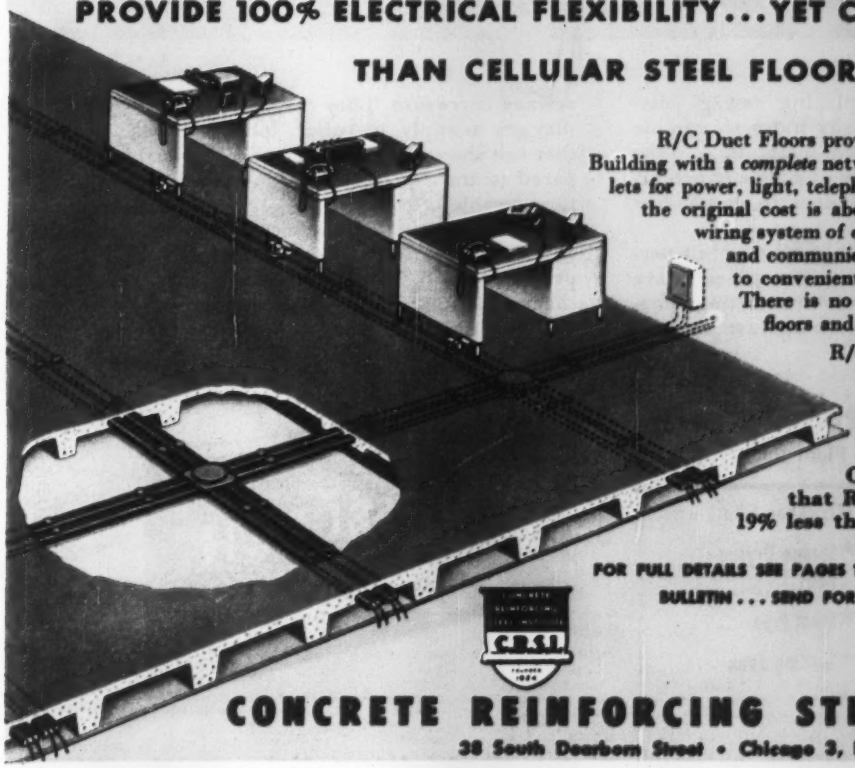
Another REINFORCED CONCRETE BUILDING WITH...

low cost R/C DUCT FLOORS

(ELECTRIFIED CONCRETE JOIST FLOORS)

THE EDITORS BUILDING, WASHINGTON, D. C.
Leon Chatelain, Jr., Architect
Beall & LeMay, Structural Engineers
John McShain, Inc., General Contractors

PROVIDE 100% ELECTRICAL FLEXIBILITY...YET COST MUCH LESS THAN CELLULAR STEEL FLOORS



R/C Duct Floors provide tenants of the new Editors Building with a *complete* network of underfloor electrical outlets for power, light, telephone, and intercom systems. Yet the original cost is about the same as a conventional wiring system of equal capacity. Outlets for power and communications systems can be connected to convenient risers in a matter of minutes. There is no ripping up or drilling through floors and ducts.

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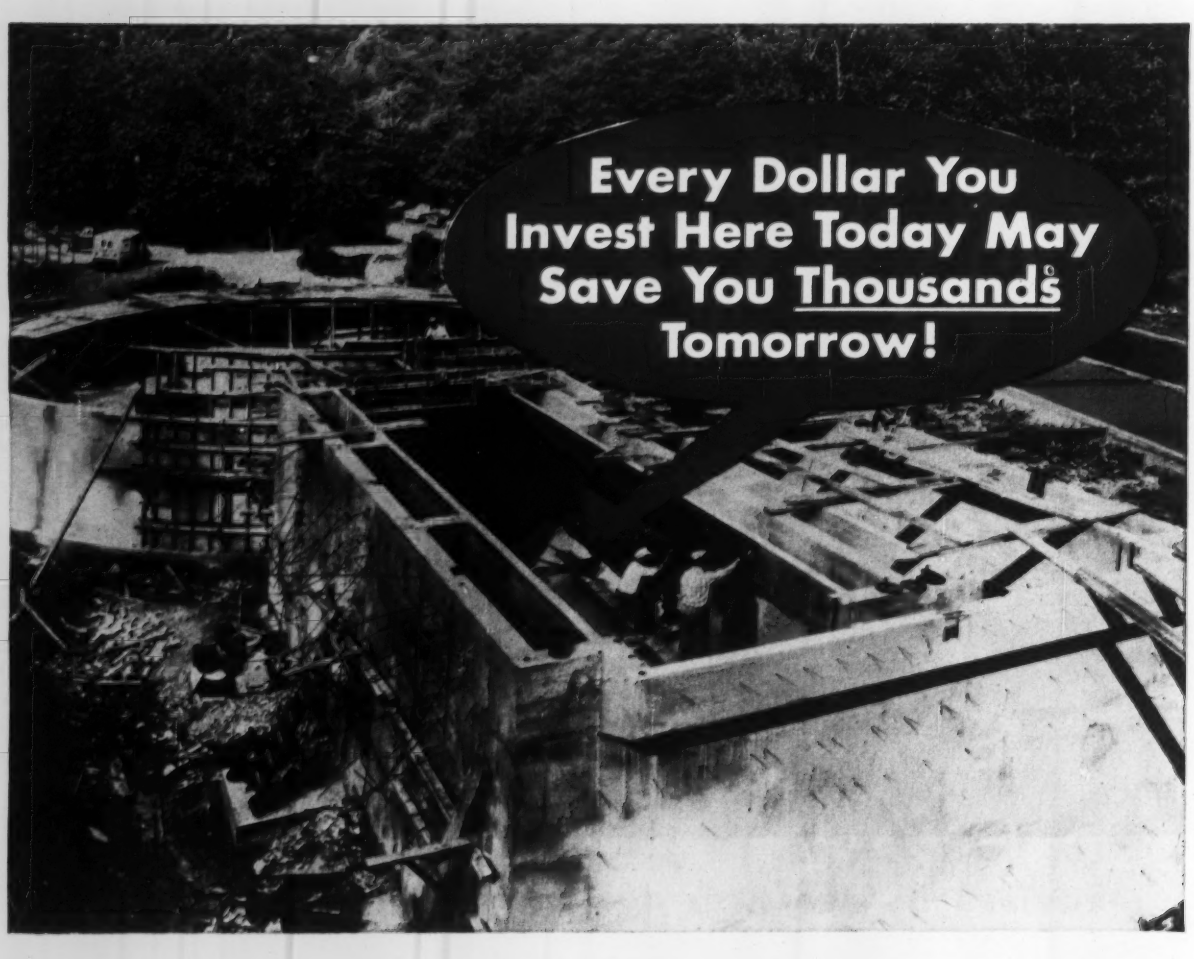

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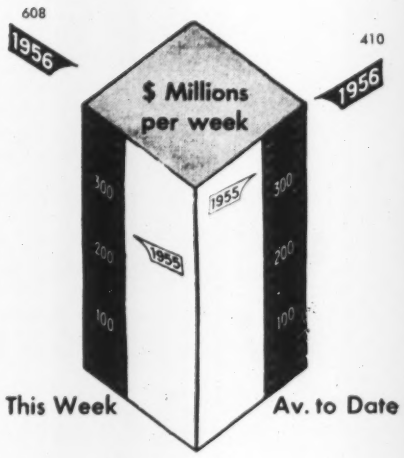
Construction Scoreboard

Contract Awards



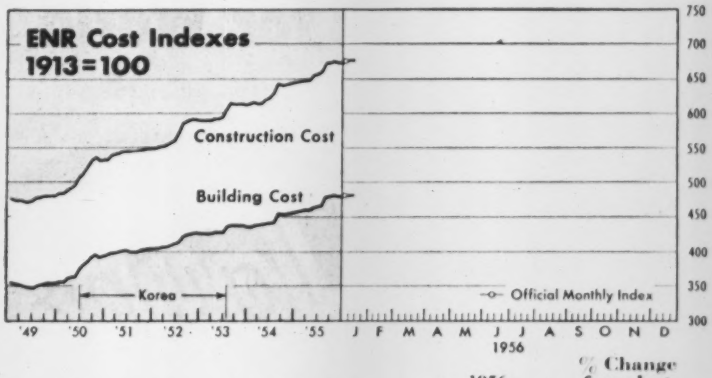
AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 3 wks 1956	Chge %
	$ millions		
Federal	$40.6	$139.3	+3
State and Municipal	132.2	373.8	+47
Total Public	172.8	513.1	+31
Total Private	435.4	717.4	+11
U. S. Total	$608.2	$1,230.5	+19
By Type of Work			
Waterworks	$7.7	$18.6	−19
Sewerage	6.5	24.7	+27
Bridges	13.1	31.9	+5
Highways	45.8	118.3	+23
Earthwork, Waterways	15.1	39.7	+154
Buildings:			
Public, Excl. Hsg.	45.1	165.3	+17
Public Housing	14.8	27.0	+1127
Private Housing	128.5	293.2	−15
Commercial	137.9	175.7	+147
Industrial	163.4	218.4	+4
Unclassified	30.3	117.7	+40
U. S. Total	$608.2	$1,230.5	+19

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

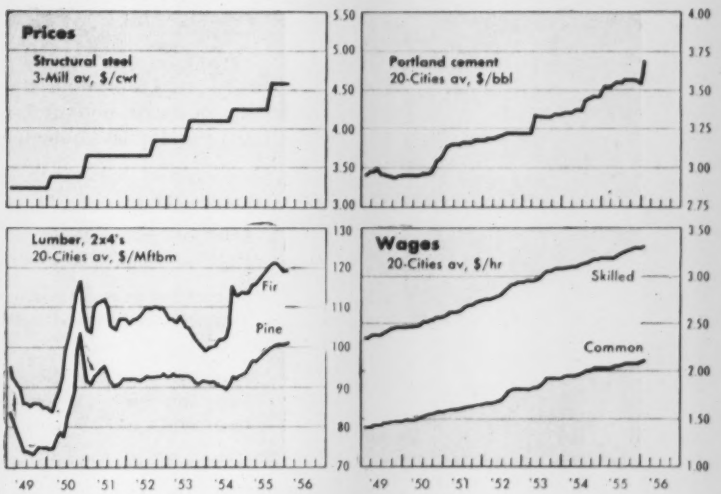
NEW CAPITAL FOR CONSTRUCTION

	Week of Jan. 12	Cum. 2 wks 1956	Chge '55-'56 %
	$ millions		
Corporate Securities	$11.3	$11.8	−70
State and Municipal:			
All Except Housg.	28.9	60.8	+3
Housing	...	...	−100
Federal Loans	2.2	6.2	0
Federal Aid	...	...	...
Total Nonfederal	$42.4	$78.8	−32
Federal Appropriations:			
In U. S.	$...	$...	...
Outside U. S.	...	...	...
Total New Capital	$42.4	$78.8	−32



ENR INDEXES (1913 = 100), 20-cities' average	1956 Jan. 12	% Change from last Month	% Change from last Year
Construction Cost	679.45	+0.9	+5.4
Building Cost	482.85	+0.9	+5.3

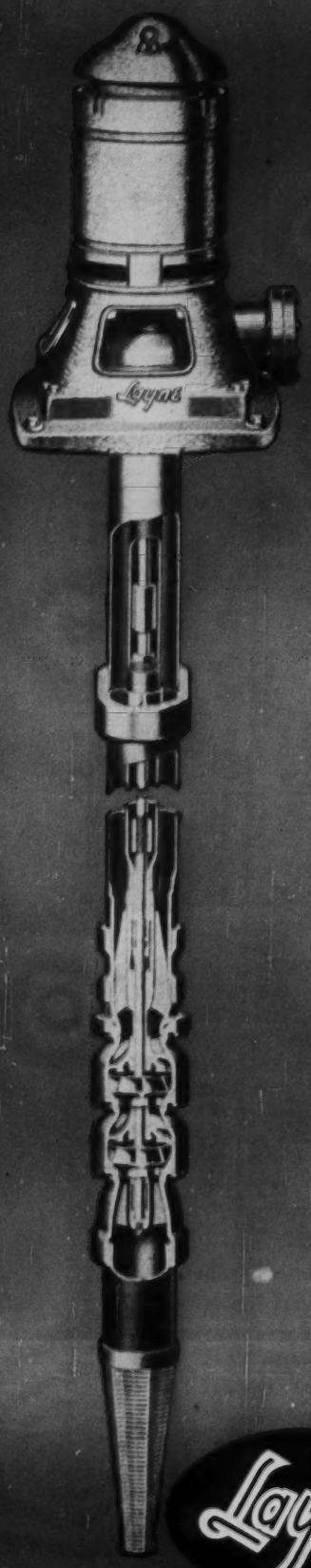
ENR COST INDEX COMPONENTS



ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost 1956 Jan.	% Change from last Month	% Change from last Year	Building Cost 1956 Jan.	% Change from last Month	% Change from last Year
Atlanta	498	+0.6	+5.1	422	+0.7	+5.5
Baltimore	593	+0.2	+3.1	473	+0.2	+4.6
Birmingham	536	+0.4	+4.9	443	+0.2	+4.7
Boston	709	0	+5.2	488	+0.2	+6.8
Chicago	765	+0.4	+3.9	489	+0.6	+4.3
Cincinnati	674	+0.4	+5.0	469	+0.6	+4.9
Cleveland	778	−0.9	+3.5	482	−1.4	+3.7
Dallas	510	0	+5.4	426	0	+6.0
Denver	654	+0.2	+3.5	484	+0.2	+3.6
Detroit	775	+0.4	+6.2	502	+0.8	+7.3
Kansas City	704	+0.1	+5.5	496	0	+5.3
Los Angeles	708	0	+6.1	479	0	+6.0
Minneapolis	721	+0.1	+3.4	503	+0.2	+2.2
New Orleans	546	+0.2	+4.2	451	+0.4	+4.2
New York	813	+2.8	+8.7	551	+1.1	+3.6
Philadelphia	722	+0.1	+3.7	536	+0.2	+2.9
Pittsburgh	696	+0.1	+6.4	507	+0.2	+6.7
St. Louis	751	+3.3	+9.0	513	+2.2	+7.3
San Francisco	686	+0.3	+6.0	465	+0.4	+5.4
Seattle	689	+0.6	+1.9	432	+0.9	+4.3
Montreal	550	0	+2.0	427	0	+1.9
Toronto	561	+0.5	n.a.	448	+0.4	n.a.

For record of ENR cost indexes for preceding years see folded insert chart ENR September 29, 1955. Extra copies of chart are available at 50 cents.



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THE LONGER LOOK:

Masonry, aluminum gain popularity in homebuilding boom; trend toward larger houses, higher price tags continues

Masonry has been gaining sharply—at the expense of wood—for exterior wall construction of houses. Aluminum also has made some significant gains. And, the 1954 trend toward larger homes—at higher prices—also is continuing.

These trends are highlights of a report recently issued by the U. S. Bureau of Labor Statistics, based on a sample survey of new nonfarm dwelling units started in the first quarter of 1955. BLS conducted a similar survey of units started in the first quarter of 1954. The 1950 and 1940 data come from studies by the Housing and Home Finance Agency.

Masonry's comeback is an eye-catcher. In 1940 and 1950, only 11% of the new houses started were of masonry. In 1954, the proportion was 13.6%. Last year, masonry construction accounted for 20.2% of the nonfarm, one-family houses started in the United States.

As facing material on frame houses, brick also has gained. Over 26% of last year's new houses had brick or brick and wood facing, against 24% in 1954 and only 12% in 1953. This is a return to the prewar popularity of brick facing. Some 20% of the new houses in 1940 were frame with brick facing.

Asbestos shingle facing has dropped sharply after a postwar spurt. In 1940, only 4% of the new houses had asbestos siding or shingles as principal facing material. The proportion shot up to 21% in 1950 but fell to 13.8% in 1954, and only 7.6% last year.

• **South boosts average**—Most of the 1954-55 gain for masonry came from the South. There, 36.9% of the new starts had masonry exterior wall construction in 1955, up from 18.6% in 1954. In the Northeast, the percentage using masonry was 8.5 in 1955 and 7.4 in 1954. In the north central region, masonry rose from 12.4% of new starts in 1954 to 13.7% in 1955. And in the West the percentage for masonry remained virtually unchanged, 12.4 in 1954 and 12.2 in 1955.

Masonry construction recorded a big gain also in non-metropolitan areas. In 1954, only 9.3% of the new starts in non-metropolitan areas had exterior walls of masonry; the figure jumped to 23.4% in 1955. For metropolitan areas the masonry percentages were 15.0 in 1954 and 19.2 in 1955.

• **Still more bedrooms**—The most significant trend pointed up by the 1954 BLS survey of characteristics of new housing was the shift to three bedrooms. Only a third of the single-family houses started in 1950 had three bedrooms, but the percentage was 57.8 in 1954. Last year it mounted still higher—to 68.1%.

The trend to more floor space continued also. The average floor area for one-family houses in 1955 was 1,170 sq ft, almost identical to the 1940 average of 1,177 sq ft. Much smaller areas prevailed in 1950, the average being 983 sq ft. The 1954 figure was 1,140 sq ft.

Higher price tags are evident, too. The median selling price in the first quarter of 1954 was $12,300. In the first quarter of 1955 it was $13,700. Far more houses were in the $12,000-$20,000 range, far fewer sold at less than $12,000. The breakdown by selling price for the two years was as follows:

Selling Price	1954	1955
Less than $7,000..	10.6%	7.1%
$7,000- $9,999 ..	14.8	10.7
$10,000-$11,999 ..	20.0	15.9
$12,000-$14,999 ..	24.0	29.1
$15,000-$19,999 ..	16.5	23.2
$20,000 and over..	9.7	10.2
Unknown	4.4	3.8

Another trend shown by the BLS survey is increasing popularity for aluminum window frames. Only 11.8% of the new dwelling units in 1954 reported aluminum frames (another 4.9% indicating a majority of aluminum). But in 1955, 21.1% of the new units reported aluminum frames.

Flush type doors increased their dominance in new homes in 1955. They were reported for 78.9% of the dwelling units in 1954 and for 85.7% in 1955. The percentage using panel type doors dropped by almost half.

Fireplaces are making a modest return. In 1940 there were fireplaces in 62% of the new houses. The percentage dropped to 22 in 1950. But last year almost an even 30% of the new starts had fireplaces. They were especially popular in the West, where 53% reported one or more fireplaces.

• **Lumber's future**—Trends in favor of masonry for exterior wall construction and aluminum for window frames have cut seriously into the share the lumber industry otherwise would have had in the homebuilding boom of the last half-dozen years. Lumber shipments, indeed, have shown scarcely any growth during the climb of the construction industry since 1950. Meanwhile portland cement, to take one example, has enjoyed a one-third growth in shipments.

The phenomenal increase in use of plywood for a wide variety of construction functions is undoubtedly one reason for the failure of lumber consumption to rise. Much of the increase in Douglas fir plywood production—from an average of 1,800,000,000 sq ft in 1947-49 to nearly 5,000,000,000 sq ft in 1955—might otherwise have been chalked up by softwood lumber.

Homebuilding still offers a strong market for lumber for many years to come, however, even though it is not likely to be a growing market. The decline in percentage of houses using lumber for exterior wall construction is offset to some extent by the increased average size of houses. Also, lumber shows promise of gaining in popularity for interior use because of its decorative qualities.

• **Plastics next?**—While lumber has been losing, relatively, among the materials used in homebuilding, this field is becoming a great growth area for other materials. Plywood, cement and aluminum have already been mentioned. A few years hence a survey of characteristics of new houses may well show substantial inroads by other materials, particularly plastics. The ingredients of a dynamic industry like homebuilding include change as well as growth.

Industrial Building

NCA has plenty of work but not enough engineers

Leading engineering-construction firms in the industrial building field are going into the 1956 construction season with the biggest backlog since the early part of the Korean war.

This should be "one of the best years" on record for heavy industrial construction, according to T. C.

Water Wells • Vertical Turbine Pumps • Water Treatment

(Curt) Williams, president of the National Constructors Association. NCA is composed of major engineering-construction companies that design and build chemical plants, petroleum refineries, steel mills, power plants and other industrial facilities.

The critical shortage of engineers is the worst headache facing members of the group, Williams indicated last week at NCA's annual meeting in New York.

In common with other segments of the construction industry, NCA's members are having troubles with materials shortages. Cement shortage claims top priority.

Structural steel shortages also have become more serious, Williams said. But the heavy industrial builders generally have avoided long delays on their projects.

"Even with shortages of steel, it is usually possible to minimize delays in completion by doing a more precise job of scheduling of field operations," Williams asserted.

The NCA president (who is also head of Stone & Webster) also commented that the steel shortage isn't holding back plans of expansion-minded process industries. "In fact, many of our clients are so sure the steel situation will get worse later, that they are rescheduling some projects to get an earlier start," Williams said.

Costs offer a comparatively bright spot in '56 as far as NCA is concerned. Williams said the group expects stability. He did not rule out the possibility of a "moderate increase" in costs—3% to 5%—but pointed out that any such rise probably would reflect a generally-rising price trend throughout the entire economy.

Urban Renewal

New York doubles size of Lincoln Square plan

Last week, New York City planners doubled the size of the proposed Lincoln Square redevelopment program, just north of the Coliseum project. The Lincoln Square plan now carries a $160-million price tag.

The project, covering 50 acres, will be built under Title I of the National Housing Act. Private investment in the area is expected to run as high as $125 million. The program envisioned by the Mayor's Slum Clearance Committee is an attempt to save an area that has been going downhill for years.

While some changes may be made before final plans are approved by the City Planning Commission and the federal government, the project will include:

- A low-rent, public housing program of 12 buildings with 4,080 units.
- A two-block Manhattan campus for Fordham University.
- A 12-story office and professional building.
- A shopping center.
- A hotel, four theatres, two parking garages, and a fashion center.
- An opera house and a concert hall (both of these are to be built by private funds).

The city plans to build two public schools, widen streets and build small parks throughout the area.

It is estimated that land acquisition costs, before resale to private developers, may come to $40 million.

Preliminary planning for the project was sparked by a $300,000 federal loan in May 1955.

Structural Steel Shipments May Be Highest Since 1929

Contractors plagued by spot shortages and slow deliveries of structural steel, heard some good news this week: Fabricators will ship 12% more structural steel to their customers this year than in '55.

Shipments in '56 will total an estimated 3,300,000 tons, according to N. P. Hayes, first vice president of the American Institute of Steel Construction and president of Carolina Steel & Iron Co. This would be the highest volume of structural steel shipments since 1929.

But even this substantial increase in shipments won't be any guarantee of normal delivery schedules this year. One reason is that the construction boom is expected to get bigger in '56 than it was in '55. Yet the estimated shipments of 3,300,000 tons this year fall short of the 1955 bookings of 3,600,000 tons.

There's another fly in the ointment. AISC reports that the present backlog of bookings—2,000,000 tons—represents about eight months' work. A year ago, the fabricators had a backlog of six months' work.

However, some of the present backlog covers orders that aren't scheduled for delivery until 1957.

Meanwhile, Hayes sees some solid support for his optimistic forecast on bigger structural steel shipments this year. As a starter, he points out that some fabricators haven't been operating at capacity because they could not get enough plain material from the mills. But, they'll get more material in '56, because of an increase in structural capacity.

Some help will come quickly from the expansion of capacity at Bethlehem Steel. Bethlehem has announced that its annual capacity for rolling wide-flange and standard shapes will be increased by more than 800,000 tons before this summer.

Inland Steel recently started producing some of the lighter-weight wide-flange sections, expects to boost its output of structural shapes by 25%.

United States Steel is spending about $19 million to improve its structural facilities at Chicago and Pittsburgh and other producers also are making additions or improvements.

Summing up the expansion programs, Hayes said: "All this adds up to a substantial increase in capacity for rolling structural shapes."

The growing trend toward more careful planning and scheduling of construction projects, with particular emphasis on longer-range planning, is another development that should ease the tight structural steel supply situation, Hayes said.

Other suppliers of construction materials also will benefit from longer-range planning by private owners and public works agencies, the AISC executive told the National Conference on Public Works.

Hayes sounded one note of caution on the increases in structural steel capacity: Fabricators supplying construction jobs will be competing with freight car builders, shipyards and machinery fabricators—all of whom expect to boost their activities this year.

Food Center Approved

Philadelphia's City Council has unanimously approved plans for a proposed $100-million food distribution center (ENR May 7, 1955, p. 27), thus ending 10 months of bitter controversy over the size and management of the project.

The council's action enables the Redevelopment Authority and the non-profit Food Distribution Center Corporation to begin land acquisition and arrange financing. As a starter, the authority will use a $2,450,000 loan already appropriated by the City Council.

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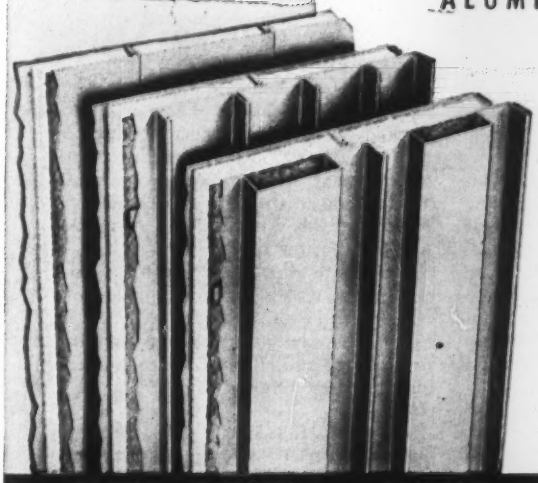

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MAHON

Labor

Wage-Hour Law Is Still a Legal Puzzle

Three jobs of a Georgia contractor are ruled subject to the law because they were a form of interstate commerce

A federal court in Georgia has agreed that application of the Fair Labor Standards (wage-hour) Act to construction activities is "complex" and "confusing."

And as the new year began, it looked as if the job of guessing whether a particular project puts a contractor in interstate commerce and makes him subject to the act is far from over—at least for those contractors who don't have union contracts that normally assure compliance with the wage, overtime and record-keeping requirements of the law.

The Georgia case involved an Albany, Ga., contractor whose activities were investigated by the Department of Labor. During the investigation, the contractor completed 1,000 jobs. The department charged wage-hour violations on five of the projects, and asked for an injunction.

When Congress passed the law in 1938, it made it applicable to workers "engaged in commerce or in the production of goods for commerce." One of the troublesome problems since then has been that of guessing which construction projects are a form of "commerce" and which aren't.

Proceeding on the theory that new construction comes within the coverage of the law where it expands or replaces an existing facility of interstate commerce, the court in Georgia found violations (overtime and record-keeping) in three instances. It refused to issue an injunction because of the complexity of the law, the character of violations and the contractor's good faith.

• **Supreme Court doctrine**—Behind the decision lay the U. S. Supreme Court's attempt of last year to put an end to the myth that new construction escapes application of the law. In a split decision, the high court had ruled that overtime had to be paid on construction of Louisiana's Algiers Lock, which was built outside of, but as part of, the Gulf Intracoastal Waterway. Although the lock was new, the court considered it an improvement to an existing instrument of interstate commerce and held it subject to the law.

It was the Supreme Court's view that application of the law must be "determined by practical considerations, not by technical conceptions." The test, it said, is "whether the work is so directly related to the functioning of an instrumentality or facility of interstate commerce as to be, in practical effect, a part of it, rather than an isolated, local activity."

• **The Georgia problem**—The court in Georgia tried to follow the Supreme Court approach. In doing so, it showed how "close" and "complex" the question has become. Here are the situations with which the Georgia contractor was faced—situations on which he had to hire professional advice, then guess, and finally defend his position in court:

• Construction of a new building to house sawmill equipment for production of spools used by a thread company. The thread, wound on spools, was sold across state lines. The building, although new and not attached to any existing building, was intended to replace an existing sawmill facility of the thread company. Answer: The law applied.

• Construction of a new television station for interstate use. The building, which eventually and incidentally housed a previously existing radio station, was a new one located a mile from the old radio station. Answer: The law did not apply.

• Construction of an addition to an existing building in which carpets would later be made for sale in interstate commerce. Manufacturing operations had not commenced when construction started, but got underway before the job was finished. Answer: The law did not apply.

• Construction of an addition to a building in which rugs were made for sale in interstate commerce. After completion, the structure was used as a warehouse and later for the manufacture of rugs. Answer: The law applied.

• Construction of an addition to a dyehouse used by a rug manufacturer, who engaged in interstate commerce. Answer: The law applied.

A Union Housing Program Is Proposed

A $90-million, middle-income, cooperative housing program, to be financed by union welfare and pension funds of New York City building trades, was proposed in outline form last week by Robert Moses, New York City Construction Coordinator.

The proposal was presented at the 53rd annual dinner of the Building Trades Employers Association of the City of New York, which pioneered development of welfare and pension funds in the construction industry.

The plan would embrace construction of 9,000 cooperative apartments on land acquired by eminent domain with substantial write-offs of acquisition costs. Total mortgage financing, some of which might come from other than union sources, would amount to $75 million.

In presenting the plan, which evolved from informal talks with George Meany (AFL-CIO president), Howard McSpedon (president of the Building Trades Council) and other industry members, Moses expressed the hope that it might "as a pilot enterprise influence similar urban developments throughout the nation."

Similar enterprises have been undertaken by New York labor groups. Local 3 of the electrical union, the clothing workers and the ladies garment workers unions are among the pioneers.

Present proposal for the building trades is based on mortgage costs of 4½% interest and 1¾% amortization. Estimated yield is 4% to 4½%. Possible short-term union loans to members to assist with equity down-payments are suggested. Five sites, containing over 100 acres, have been tentatively selected.

Contractors and union members appeared to regard the general objectives of the plan with enthusiasm. This week the joint trustees are meeting to explore its possibilities and implications.

Existing problems include the fundamental differences between welfare and pension funds and possible legal obstacles to such investments under existing trust agreements.

The idea was endorsed last month by George Meany. Among its merits he saw a sound investment with an attractive return, direct benefits from increased employment, and better homes for union members who have already earned their way out of publicly subsidized low-rent housing.

OFFICIAL PROPOSALS

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CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Bids: February 9, 1956

Delaware River Port Authority Administration Building Camden, New Jersey

GENERAL CONSTRUCTION WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT BETWEEN SECOND AND FOURTH STREETS, PHILADELPHIA, PENNSYLVANIA TOLL PLAZA WALT WHITMAN BRIDGE CONTRACT NO. P-10A

Sealed bids will be received for GENERAL CONSTRUCTION WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT between Second and Fourth Streets, Philadelphia, Pennsylvania Toll Plaza, known as Contract No. P-10A, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P.M., (Eastern Standard Time), February 9, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $75,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business—either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
Joseph K. Costello,
Executive Director

January 12, 1956

Bids: February 9, 1956

Delaware River Port Authority Administration Building Camden, New Jersey

HEATING AND VENTILATING WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT BETWEEN SECOND AND FOURTH STREETS, PHILADELPHIA, PENNSYLVANIA TOLL PLAZA WALT WHITMAN BRIDGE CONTRACT NO. P-10C

Sealed bids will be received for HEATING AND VENTILATING WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT between Second and Fourth Streets, Philadelphia, Pennsylvania Toll Plaza, known as Contract No. P-10C, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P.M., (Eastern Standard Time), February 9, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $15,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO,
Executive Director

Bids: February 9, 1956

Delaware River Port Authority Administration Building Camden, New Jersey

ELECTRICAL WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT BETWEEN SECOND AND FOURTH STREETS, PHILADELPHIA, PENNSYLVANIA TOLL PLAZA WALT WHITMAN BRIDGE CONTRACT NO. P-10D

Sealed bids will be received for ELECTRICAL WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT between Second and Fourth Streets, Philadelphia, Pennsylvania Toll Plaza, known as Contract No. P-10D, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P.M., (Eastern Standard Time), February 9, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $50,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
Executive Director

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4603) will be received at Huron, South Dakota, until February 16, 1956, for furnishing labor and materials for Granite Falls Substation, Missouri River Basin Project, South Dakota. Location in Granite Falls, Minnesota. Principal items are 18,700 cu. yds. excavation; 900 cu. yds. concrete; furnishing and erecting 230,000 lbs. steel structures; constructing service building; and other work. Completion time 295 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Department of Commerce, Bureau of Public Roads, January 10, 1956. SEALED BIDS will be received at the office of the Park Superintendent, Homestead, Florida, until 11:00 a.m., E.S.T., FEBRUARY 10, 1956, for Project 1A6, Everglades National Park, Dade County, Florida. Excavation of oolite rock borrow and construction of roadway embankments, processing oolite rock base, bituminous prime and surface treatment, seeding and other work from near Concrete Bridge, 5.701 miles to near Nine Mile Bend. The approximate quantities of the more important items are: 32,000 cu. yd. Marsh Excavation, 110,000 cu. yd. Excavation for Borrow, and 230 cu. yd. Concrete. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the offices of the Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, and Gatlinburg, Tennessee. H. J. Spellman, Division Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4607) will be received at Ephrata, Washington, until February 23, 1956, for furnishing labor and materials for Earthwork and Structures for Royal Branch Canal, Station 1-17 to Station 151-58, Wasteway and Laterals, Columbia Basin Project, Washington. Location near Othello, Washington. Principal items are 600,000 cu. yds. excavation; 1,180 cu. yds. concrete; 6 radial gates and hoists; 45 metal slide gates; 7,600 lbs. miscellaneous metalwork; and other work. Completion time 330 days. For particulars, address Bureau of Reclamation, P. O. Box 368, Ephrata, Washington; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4610) will be received at Coulee Dam, Washington, until February 28, 1956, for furnishing labor and materials for centralized grease lubricating systems for hydraulic turbines, Grand Coulee Power Plant, Columbia Basin Project, Washington. Location in Coulee Dam, Washington. Principal items are furnishing and installing centralized grease lubricating systems for 18 main-unit turbines; furnishing and installing centralized grease lubricating systems for 3 station-service turbines; and other work. Completion time 300 days. For particulars, address Bureau of Reclamation, Coulee Dam, Washington; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: February 1, 1956

Pennsylvania Turnpike Commission Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m. Eastern Standard Time, the 1st day of February 1956, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the Construction of a Maintenance Building at Turnpike Station 1268+25, Carbon County, at the Pocono Interchange connecting to T. R. 940, Contract No. 562.

The work to be performed under this contract consists of the construction of a Maintenance Building at the Pocono Interchange, at location on the Turnpike listed above, not including however, the plumbing, heating system, the electrical work, the general site grading, the paving or the seeding and sodding, except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 12 January 1956 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's Field Office in Conshohocken, Pennsylvania, 19th Avenue and Hallowell Street and at the Commission's Field Office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
4 January 1956

Bids: February 1, 1956

County of Westchester, New York

ADVERTISEMENT
CONTRACT NO. 877
FOR: SEWAGE TREATMENT PLANT SITE PREPARATION
YONKERS SEWER PROJECT LOCATED IN THE CITY OF YONKERS,
WESTCHESTER COUNTY, NEW YORK

Sealed bids or proposals will be received in Room 508, County Office Building, White Plains, New York, until 11:00 A. M., Eastern Standard Time, Wednesday, February 1, 1956, immediately after which the bids will be publicly opened and read aloud in Room 808 of said building.

The work under Contract 877 comprises the construction of a site in the Hudson River, upon which site will be constructed the Yonkers Sewage Treatment Plant. The work includes the site construction, a wharf, an outfall, drainage and appurtenant work.

The site of the work is located in the City of Yonkers and is bounded on the South by the City of New York limits and on the East by the New York Central Railroad Company Property.

The time for completion of the work is 200 calendar days.

All contract documents may be seen in Room 508, County Office Building. Bidders may procure plans and specifications for the work proposed upon a cash deposit of $25.00 which deposit will be refunded provided that all plans and copies of specifications are returned in good condition within thirty days after the award of the contract or rejection of bids.

All bids must be accompanied by a certified check payable to the County of Westchester, New York, in the amount of not less than $110,000 or by a bid bond of like amount. Bids must also be accompanied by a consent of surety in the form included in the Contract Documents.

The County of Westchester reserves the right to waive any informalities in the bids or to reject any and all bids.

COUNTY OF WESTCHESTER
DEPARTMENT OF PUBLIC WORKS
BY: JAMES C. HARDING
COMMISSIONER
DATED: White Plains, New York
January 19, 1956

Bids: February 9, 1956

Delaware River Port Authority Administration Building Camden, New Jersey

PLUMBING WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT BETWEEN SECOND AND FOURTH STREETS, PHILADELPHIA, PENNSLVANIA TOLL PLAZA WALT WHITMAN BRIDGE
CONTRACT NO. P-10B

Sealed bids will be received for PLUMBING WORK FOR THE ADMINISTRATION AND MAINTENANCE BUILDINGS, TOLL HOUSES AND EQUIPMENT between Second and Fourth Streets, Philadelphia, Pennsylvania Toll Plaza, known as Contract No. P-10B, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P. M., (Eastern Standard Time), February 9, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $10,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
Joseph K. Costello,
Executive Director

January 12, 1956

Bids: January 31, 1956

Contract PN-300.003

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
Buildings Nos. 178, 179, 180 and 181 and Wharf
Fill, Sand Drains and Surcharge Fill

Sealed proposals for fill, sand drains and surcharge fill in connection with the construction of Buildings Nos. 178, 179, 180 and 181 and wharf at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, January 31, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, January 19, 1956

U. S. Government

General Services Administration, Public Buildings Service: Sealed bids for Alterations to Building, at the U. S. Appraisers Stores, 201 Varrick Street, New York, New York, will be received in triplicate until 2 P.M., EST, February 8, 1956, and then publicly opened in the Bid Room of the Business Service Center, 250 Hudson Street, New York 13, New York. Specifications, etc., may be obtained from the Business Service Center.

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OFFICIAL PROPOSALS

Bids: February 2, 1956

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 2nd day of FEBRUARY 1956, by Henry A. Cohen, Director, Bureau of Contracts and Acounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

Contract No.	County	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany, N. Y.						
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
DISTRICT No. 3, Wm. Robinson, District Engineer, Weigh Lock Building, Syracuse, N. Y.						
DISTRICT No. 4, B. F. Perry, Acting District Engineer, Barge Canal Terminal, Rochester, N. Y.						
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court St., Buffalo, N. Y.						
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
T.U.B. 56-1E	Westchester, Rockland, Orange, Ulster, Greene, Albany, Schenectady, Montgomery, Herkimer, Oneida, Madison, Onondaga, Cayuga, Seneca, Ontario, Monroe, Genesee and Erie	New York State Thruway—Southern Westchester Connection Hudson, Catskill, Mohawk and Ontario Sections at 40 Toll Plazas	....	Electrical Facilities & Associated Items for Expansion of Existing Toll Facilities	$1,250 Plans $10	$23,000
T.T.B. 56-1	Rockland, Greene, Oneida, Onondaga, Ontario, Genesee, and Erie	New York State Thruway—Hudson, Catskill, Mohawk and Ontario Sections at Toll Plazas Nos. 14, 21, 33, 39, 45, 48, & 49	....	Paving and Misc. Work for Expansion of Existing Toll Facilities	$3,500 Plans $10	64,000

NOTE: Plans and proposals for the above two contracts will be distributed only from our Albany and New York City Offices but may be examined at each district office where the work is located.

DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
M.T. 56-1	Montgomery	New York State Thruway—Mohawk Section—Sub. 12C (Caroga Creek-Fort Plain)	....	Drainage Basin With Slide Gates & Misc. Work	$220 Plans $10	4,000
DISTRICT No. 4, B. F. Perry, Acting District Engineer, Barge Canal Terminal, Rochester, N. Y.						
R.C. 56-4	Monroe	Parma Corners-Spencerport-North Chili, S. H. 195	0.02	Corrug. Plate Pipe Culvert and Misc. Work	$500 Plans $10	9,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court St., Buffalo, N. Y.						
E.T. 56-1 E.T.C. 56-2 FAET 56-3 FAST 56-1 S.T. 56-2	Erie	New York State Thruway—Erie Section—Sub. E-8-C (Abbott Road to Cazenovia Creek); Four Secondary Cross or Marginal Roads Proj. U-1072(3)	2.35 (4.15) (Acc.)	9" Two Crse. Cem. Conc. Pavt. 2 @ 25' Wide = 2.59 Mi. (Two Crse. Cem. Conc. Pavt. on Ramps = 2.54 Mi.) Asp. Conc., Opt. = 1.35 Mi. Misc. Work = 0.02 Mi. 3 Hy. Sups. Comp. I-Beams 1 @ 163.8', 1 @ 224.5' & 1 @ 168.7' 1 RR Sup. Comp. Pl. Girder 570' 1 Br. Comp. Pl. Girder 95.5'	$350,000 Plans $50	6,179,000
FAET 56-4 FARC 56-2	Erie	New York State Thruway—Erie Section—Sub. E-8-D (Cazenovia Creek-Clinton Street); Aurora-Buffalo Pt. 1, S. H. 128 Proj. U-1072(4)	4.19 (0.23) (Acc.)	9" Two Crse. Cem. Conc. Pavt. 2 @ 25' Wide = 3.67 Mi. 9" Cem. Conc. Pavt. Var. Wide = 0.48 Mi. Asp. Conc. Pavt., Opt. = 0.23 Mi. Misc. Work = 0.04 Mi. 2 Br. Comp. Plate Girders 355.9' and 358' 4 Hy. Sups. Comp. I-Beams 156.7', 202.9', 166.7' and 134.9' 1 RR Sup. Comp. I-Beam 520.5'	$427,000 Plans $100	7,772,000
E.T. 56-5 E.T.C. 56-6 S.T. 56-5 R.C. 56-3	Erie	New York State Thruway—Erie Section—Sub. E-8B (Bayview Rd. to Abbott Rd.); Athol Springs-Orchard Park Pt. 2, S. H. 1586 and 2 Secondary Cross Roads	3.70 (2.34) (Acc.)	9" Two Crse. Cem. Conc. Pavt. 2 @ 25' Var. Wide = 4.16 Mi. (Two Crse. Cem. Conc. Pavt. on Ramps = 1.45 Mi.) Asp. Conc., Opt. = 0.39 Mi. Misc. Work = 0.04 Mi. 2 Hy. Sups. Plate Girders 247' and 245.5' 4 Hy. Sups. Comp. I-Beams 282.8', 266.8', 272.3' & 276' 2 RR Sups. Comp. I-Beam 71' and 196.2'	$300,000 Plans $100	5,584,000
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
TSPRC 56-1	Columbia and Dutchess	Taconic State Parkway Sec. 7, Pt. 3; Sec. 8; Sec. 9A, Pts. 1-2; Sec. 9B, Pt. 1	12.29	Washout Repairs and Misc. Work	$5,000 Plans $10	92,000
NET 56-1 FANET 56-2 ST 56-3 FAST 56-4 RC 56-1	Westchester	New York State Thruway—New England Section—Sub. NE3 (Chatsworth Ave.-Manaroneck Ave.); Weaver St., Pt. 1, S. H. 1645 and 7 Secondary Cross Roads Project F-1068(10)	2.49 (3.05) (Acc.)	9 Cem. Conc. Pavt. 2 @ 37' Var. Wide = 4.59 Mi. Asp. Conc., Opt. = 0.95 Mi. 8 Hy. Sups. Comp. I-Beam 107.5', 110.2', 109.3', 107', 112.3', 124.5', 120.3' and 202.7' 1 RR Sup. Comp. I-Beam 55.3' 4 Brs. Conc. Boxes 36', 36', 36' & 54'	$475,000 Plans $100	8,873,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders." When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated. The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: February 16, 1956

Power Authority of The State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF INTAKE GATE HOISTS FOR BARNHART ISLAND POWER PLANT
SPECIFICATIONS NO. PA-5-15052
ST. LAWRENCE CONTRACT NO. P-34

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the manfacture and furnishing of forty-eight (48) Intake Gate Hoists for Barnhart Island Power Plant and delivery thereof f. o. b. destination in the following ways:

(1) If brought in person on the day of receiving bids until 10:30 A. M. Eastern Standard Time on the 16th day of February, 1956, 270 Broadway, Hearing Room C on the sixth floor, New York 7, New York.

(2) If mailed in, until 10:15 A. M. Eastern Standard Time, on the 16th day of February, 1956, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposal will be publicly opened and read aloud at the time and at the address given in (1) above.

Bids will be entertained for forty-eight fixed hoists and accessories.

Bids will not be restricted to American manufacturers.

Plans, specifications and proposal forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Twenty ($20.00) dollars per initial set of contract documents and Ten ($10.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 percent of the gross sum bid in the bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4602) will be received at Phoenix, Arizona, until March 6, 1956, for furnishing labor and materials for Multi-Channel Microwave Radio Communication System from Phoenix, Arizona to Parker Dam, California, Parker-Davis Project, Arizona-California. Principal items are furnishing and installing a complete system including one terminal station at Phoenix, Arizona and one at Parker Dam, California, a distance of about 130 miles with five proposed repeater stations; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, P. O. Box 392, Phoenix, Arizona; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

SEARCHLIGHT SECTION

OFFICIAL PROPOSALS

Bids: February 1, 1956

Power Authority of The State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF 440 V. MOTOR CONTROL CENTERS AND APPURTENANCES
SPECIFICATIONS NO. PA-5-14009
ST. LAWRENCE CONTRACT NO. P29

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture and furnishing of forty-one (41) 440 v. motor control centers and delivery thereof f.o.b. destinations, in the following ways:

(1) If brought in person on the day of receiving bids, until 10:30 A. M. Eastern Standard Time on the 7th day of February, 1956, Hearing Room C on the 6th floor, 270 Broadway, New York, New York.

(2) If mailed in, until 10:15 A. M. Eastern Standard Time on the 7th day of February 1956, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposals will be publicly opened and read aloud at the time and at the address given in (1) above. Bids will be entertained for the forty-one (41) 440 v. motor control centers and associated equipment and services in accordance with the bidding schedule. Erection at the site of installation will be done by others but services of an erecting engineer shall be provided by the manufacturer if and when required. Delivery of the equipment will be required starting April 1, 1956.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-5-14009

Bids: February 1, 1956

Pennsylvania Turnpike Commission Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m. Eastern Standard Time, the 1st day of February 1956, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the Construction of Plumbing System for the Pocono Maintenance Building at Turnpike Station 1268+25, Carbon County, Contract No. 562-A.

The work to be performed under this contract is generally in and around the Maintenance Building at the Pocono Interchange. The work does not include the Electrical System, the Heating System nor building construction except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 12 January 1956 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's Field Office in Conshohocken, Pennsylvania, 10th Avenue and Hallowell Street and at the Commission's Field Office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
4 January 1956

Bids: February 1, 1956

Pennsylvania Turnpike Commission Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m. Eastern Standard Time, the 1st day of February 1956, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the Construction of Electrical System for the Pocono Maintenance Building at Turnpike Station 1268+25, Carbon County, Contract No. 562-C.

The work to be performed under this contract is generally in and around the Maintenance Building at the Pocono Interchange. The work does not include the Plumbing System, the Heating System nor building construction except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 12 January 1956 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's Field Office in Conshohocken, Pennsylvania, 10th Avenue and Hallowell Street and at the Commission's Field Office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
4 January 1956

Bids: January 31, 1956

New Jersey Turnpike Authority

CONTRACT NO. N-65

Proposals are invited for Contract No. N-65 which involves the furnishing of materials for, and the application of, traffic lane markings on the pavements extending from the Newark Airport Interchange of the New Jersey Turnpike, in the City of Newark, Essex County, to the northeasterly end of the North Terminal Ramps at Jersey Avenue in Jersey City, Hudson County, New Jersey, in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The principal items of work include:

Traffic Paint	1500 gallons
Glass Spheres	8400 pounds

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:O'Clock, Eastern Standard Time on the morning of January 31, 1956, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after January 17, 1956, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Five Dollars ($5.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

January 17, 1956

SEARCHLIGHT SECTION

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OFFICIAL PROPOSALS

Bids: February 1, 1956

Pennsylvania Turnpike Commission Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m. Eastern Standard Time, the 1st day of February 1956, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the Construction of Heating System for the Pocono Maintenance Building at Turnpike Station 1268+25, Carbon County, Contract No. 562-B.

The work to be performed under this contract is generally in and around the Maintenance Building at the Pocono Interchange. The work does not include the Electrical System, the Plumbing System nor building construction except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 12 January 1956 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's Field Office in Conshohocken, Pennsylvania, 10th Avenue and Hallowell Street and at the Commission's Field Office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
4 January 1956

Bids: January 26, 1956

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on January 26, 1956 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON ROUTE 17 EXPRESSWAY—TYLERS SWITCH TO HANCOCK, TOWNSHIP OF HANCOCK—DELAWARE COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-82

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.

(b) Mr. F. J. Weber, Acting District Engineer, 71 Frederick Street, Binghamton, New York.

(c) Mr. William Trainor, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $42,750.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,140.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

J. W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

Bids: February 2, 1956

Wild Creek Gravity Water Supply System

Notice to Contractors

BETHLEHEM AUTHORITY
BETHLEHEM, PENNSYLVANIA

Penn Forest Dam and
Reservoir and Appurtenant Work
Contract No. 1

Sealed proposals addressed to Bethlehem Authority, 6 West Broad Street, Bethlehem, Pennsylvania for construction of Penn Forest Dam and Reservoir and Appurtenant Work in connection with the Wild Creek Gravity Water Supply System will be received at the office of Bethlehem Authority, 6 West Broad Street, until one o'clock P.M., Eastern Standard Time on the second day of February, 1956, at which time and place they will be publicly opened and read.

The work under this contract will consist of the construction of a dam and reservoir on Wild Creek approximately 2.4 miles upstream from the present dam and will include all clearing, grubbing and stripping; excavation; rolled embankment; rock embankment; concrete masonry for spillway and wasteway channels, cut-off walls, intake tower and valve chambers, stream control conduit, water supply pipe tunnel; slope paving; and other structures; drilling and grouting; rip rap; piping and valves; sluice gates; roadways and parking areas; stream relocation and all appurtenant operations and equipment.

Plans and Specifications, Form of Contract and Bidding Blanks are on file and open to public inspection at the office of Bethlehem Authority, 6 West Broad Street, Bethlehem, Pennsylvania, or at the office of Morris Knowles Incorporated, Engineers, 1312 Park Building, Pittsburgh, Pennsylvania. The plans and specifications may be obtained at either of said offices for use in preparing a bid, upon deposit of Fifty Dollars ($50.00) for each set. If the plans and specifications are returned in good condition within a period of two weeks after the date set for opening of Bids, the full amount of the deposit for one set will be refunded to each actual bidder. Other deposits will be refunded with a deduction of Twenty-Five Dollars ($25.00) for each set of plans and specifications to defray the actual cost of reproduction. If the plans and specifications are not returned within the time stated, the entire amount of the deposit will be forfeited.

No bid may be withdrawn during a period of sixty (60) days after the scheduled closing time for receipt of bids.

The right to waive any informality in any bid; to accept any bid; or to reject any or all bids, is reserved by Bethlehem Authority, Bethlehem, Pennsylvania.

Each proposal shall be accompanied by a certified check, bank treasurer's check, or cashier's check, in an amount not less than ten per cent (10%) of the total of the bid submitted, in the form and subject to the conditions provided in the Information for Bidders. The bidder to whom a Contract is awarded will be required to furnish, for the faithful performance of the work thereunder, an approved Surety Company performance Bond in an amount equal to 100 per cent (100%) of the total of the of the bid submitted, and a separate approved Surety Company Labor and Materialmen's Bond in an amount equal to 50 per cent (50%) of the total of the bid submitted.

BETHLEHEM AUTHORITY
BETHLEHEM, PENNSYLVANIA
By: W. R. Coyle, Chairman
Robert L. Fox, Executive Director and Chief Engineer
MORRIS KNOWLES INCORPORATED, Engineers
January 5, 1956

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Invitation No. DS-4606) will be received at Denver, Colorado, until February 21, 1956, for furnishing one 100-ton, single-trolley, motor-operated, traveling crane for Glendo Power Plant, Missouri River Basin Project, Wyoming. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. DC-4604) will be received at McCook, Nebraska, until February 21, 1956, for furnishing labor and materials for Earthwork and Structures for Upper Meeker Canal, Station 0/75 to Station 567.00, Road Relocations, and Drains, Missouri River Basin Project, Nebraska. Location near Trenton, Nebraska. Principal items are 820,000 cu. yds. excavation; 330,000 cu. yds. compacting embankments; 4,100 cu. yds. concrete; 2,370 lin. ft. concrete pipe; various slide gates and metalwork; and other work. Completion time 160 days. For particulars, address Bureau of Reclamation, P. O. Box 737, McCook, Nebraska; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

GOVERNMENT OF IRAQ DEVELOPMENT BOARD AND MINISTRY OF DEVELOPMENT, NASIRIYAH ROAD BRIDGE CONTRACT B/8 (1956). The Development Board and Ministry of Development invites TENDERS from experienced Civil Engineering Contractors for the construction of a steel cantilever road bridge approximately 180 metres long and 11 metres wide over the River Euphrates at Nasiriyah, together with the steel and reinforced concrete approach viaducts and embankments thereto. The Contract Documents and Conditions as to Tendering may be inspected on and after the 17th day of January 1956, at any of the following places:—(a) The offices of the Directorate General of Legal Affairs and Contracts, Ministry of Development, Baghdad, Iraq. (b) The Embassies and Legations of Iraq in Washington, Paris, Rome, Brussels, Bonn, Cairo, Karachi and New Delhi. (c). The offices of Rendel, Palmer & Tritton, 125, Victoria Street, London, S.W.1, England. Firms desiring to Tender may obtain two copies of the Contract Documents between the 17th day of January, 1956, and the 17th day of March, 1956, (both days inclusive) from the Directorate General of Legal Affairs and Contracts, Ministry of Development in Baghdad, or the offices of Rendel, Palmer & Tritton in London, upon payment of twenty five Iraqi Dinars or the equivalent thereof, which is not returnable, for each two sets of documents. Tenders must be accompanied by a preliminary deposit of ID. 10,000/—(Ten thousand Iraqi Dinars) either in cash or by a letter of guarantee to be made by or through an approved Bank established in Iraq. Fully detailed conditions as to this deposit may be ascertained from the "Conditions of Tender" attached to the Contract Documents. Tenders must be submitted to the Development Board (Directorate General of Legal Affairs and Contracts, Ministry of Development), Baghdad, Iraq, in sealed envelopes endorsed clearly on the outside with the words "Nasiriyah Road Bridge" and will be received up to noon on the 17th day of April, 1956. A Memorandum of Capacity, Method of Procedure and Articles of Association must be submitted at the same time. Particular attention is drawn to Clause 8 of the "Conditions of Tender" stating that tenders will be accepted only from firms of Contractors who have previously executed works of a similar character and magnitude. Tenders not submitted within the time specified or not accompanied by a receipt of the deposit, or a letter of guarantee or if the Tenderer resides in a Liwa in Iraq where a chamber of Commerce exists, by a Certificate of Membership of a Chamber of Commerce, shall be neglected. The Board does not bind itself to accept the lowest or any Tender. Minister of Development. A.M.19.12.

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P-8946, Engineering News-Record
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REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Estimator — Fully qualified and experienced building estimator to locate in Texas, experienced in preparing estimates on large building projects. Position permanent with excellent opportunity and salary commensurate with ability. Please furnish experience record, training, salary desired, telephone number and address in first response. P-8555, Engineering News-Record.

Wanted Bridge Superintendent take complete charge of operations experienced in highway bridge construction—location mid-west area. Reply stating qualifications and salary desired. H. H. Mass Construction Company Algonquin, Illinois.

Wanted Construction Superintendent experienced in paving operations. State Highway Work in Illinois and Iowa. Ability to take complete charge. Reply stating qualification and salary desired. H. H. Mass Construction Company Algonquin, Illinois.

Draftsmen — Career opportunities available for two experienced structural steel or ornamental metal detailers and checkers. Desirable working and living conditions. Give full information as to experience and expected remuneration in reply. The J. T. Edwards Co. 1241 McKinley Avenue, Columbus, Ohio.

Building estimator for large, long established construction company located 20 miles outside Boston. Salary and position commensurate with ability. State full qualifications and references. P-8829, Engineering News-Record.

Wanted by General Contractor in Michigan. Young engineer for field layout work and some quantity take-off work in office. State age, experience desired. P-8811, Engineering News-Record.

Wanted — Superintendent. Free to Travel, capable of estimating and constructing sewage disposal plants, sewerage interceptor systems, water filtration and distribution systems. State age, education and proposition desired. P-8745, Engineering News-Record.

Having opening for well qualified bridge foreman and superintendent in Florida. Apply to P-8737, Engineering News-Record, giving complete background, references, salary desired, etc.

Superintendent wanted by concrete and asphalt paving contractor in Maryland—Virginia—D.C. area. Unusual opportunity. P-8735, Engineering News-Record.

Electrical Engineer: University Campus expansion requires permanent services for consultation, design and inspection of construction on complex electrical installations in buildings, underground utility service, and transformer stations. Degree or equivalent plus several years experience desired. University community attractive to family man. Write qualifications and salary requirements to Personnel Director, Indiana University, Bloomington, Indiana.

Wanted—Superintendent for all phases Asphalt Construction in Arkansas. Experience in hot asphalt plant operation necessary. Apply in own handwriting for interview. Salary open. Write Asphalt Division P.O. Box 2660, Little Rock, Ark.

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Salary range $4200 to $5100.
Send or bring history of education and experience, as well as references to:
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State of New Jersey,
Administrative Division,
State House, Trenton 25, New Jersey.

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236 Third Street, San Bernardino, Calif.

POSITIONS VACANT

Superintendent for earth moving and rock excavation to be located in New York and neighboring states. Must be experienced with all phases of earth moving. Salary open. P-8845, Engineering News-Record.

Civil Engineering Teachers to teach lecture and laboratory courses in surveying, strength of materials and construction engineering. M.S. in C.E. plus construction exper. desired. Excellent opportunity for young man. New building and equipment. Opportunity for graduate work. Write: Head, Engineering Dept., San Jose State College, San Jose, California.

General Superintendent with following wanted by progressive, medium size New Jersey General Construction firm. Top man only. Salary to start $12,000. State qualifications first letter. P-8910, Engineering News-Record.

Experienced Bridge Construction Superintendent please submit work history and references preliminary to interview, location: Maryland. P-8922, Engineering News-Record.

Administrative Civil Engineer, over 45. P.E. with a background in municipal engineering and specific experience in sewer design and drainage. Must be able to handle administration and personnel problems. Salary $8,100 per year and up. Location Southeastern Michigan. Furnish experience record and references, well detailed. P-8880, Engineering News-Record.

Civil Engineer graduate at least 35, with minimum 5 years municipal engineering. Capable design of sewers and small sewage treatment plants. Salary open. Location Southeastern Michigan. Furnish experience record and references. P-8885, Engineering News-Record.

Engineers one or two years experience in structural design or recent graduates. Consulting engineers office Newark, N. J. Give education, experience and salary. P-8890, Engineering News-Record.

Sewer Foreman, experienced: state experience & salary expected in first letter. Locate in St. Louis, Mo. P-8888, Engineering News-Record.

Civil Engineers for design of structural steel and reinforced concrete. Experience desirable. D. B. Steinman, 117 Liberty St., New York 6, N. Y.

(Continued on page 120)

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P-8825, Engineering News-Record
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P-8936, Engineering News-Record
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(Continued from page 118)

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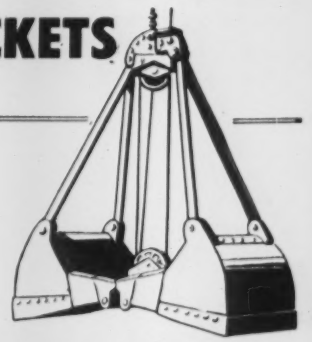

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20 Ton	3½	x 3½ x	5/16"		50 Ton	12"	@ 35#	50 Ton	12"	@ 25#
20 Ton	3½	x 3½ x	⅜"					50 Ton	12"	@ 30#
20 Ton	4	x 3 x	¼"							
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Editorials

Failures Point to Need for Research

THE REPORT ON THE CONCRETE RIGID FRAMES that developed troublesome cracks in recently built Air Force warehouses calls attention to a number of conditions that could have been responsible (ENR Jan. 12, p. 21), and this makes it possible to draw conclusions on how to prevent similar troubles in the future. The Corps of Engineers performed a fine service for the profession by making the report available.

One important point in the report, for example, is that volume changes in concrete—due to temperature variation, creep and shrinkage—should be considered in design, along with dead and live loads. Another point—well known but apparently worth reiterating—is that expansion joints that do not function are worse than useless. Still another is that points of counterflexure in continuous beams are not fixed, but may vary in location with loading and volume changes; hence, it is dangerous to place longitudinal and web reinforcing for full uniform load only.

The report also raised the question of adequacy of present requirements for diagonal tension and shear in the American Concrete Institute building code. As a consequence, the ACI is now considering, as part of an extensive updating of the code, the following revision: When the allowable shearing stress is exceeded, web reinforcing must be incorporated to carry two-thirds the shear at the section or the excess over the allowable, whichever is greater. Under present requirements, the steel has to carry only the excess.

There appears to be some experience and test data, in addition to this report on the rigid-frame warehouses, to warrant a revision of the code. However, the haste with which the change was proposed by an ACI committee on acount of the warehouse troubles may lead many engineers to wonder whether sufficient study has been given to this subject. Not that there may be doubt as to whether the revision is necessary and in the right direction, but does it go far enough?

The danger from premature approval of this revision comes from the possibility that inexperienced designers may rely too heavily on it, whereas there is not sufficient information on hand to prove that strict adherence to the new provision in the code will guarantee a safe structure under all conditions.

One important question that still needs answering, for instance, is: Should web reinforcing carry the full shear when the allowable stress is exceeded? For if stirrups are proportioned to carry either the excess or two-thirds the total shear, then before the steel reaches the allowable stress, will not the strains be so large that the concrete will crack and therefore not be able to transmit shear or tension? So, whether designed for it or not, the steel may have to carry the full tension.

More data, particularly from studies of full-size members, would be desirable to answer this and many other questions on the behavior of reinforced concrete beams.

Perhaps discussion of the revision will bring forth the necessary answers or will spur research to supply them. Granted there is a need for action while the lessons learned from the Air Force warehouses are still fresh, there appears reason for caution in the code revision.

Regional Highways

A FINE EXAMPLE OF A TYPE OF COOPERATIVE PLANNING for interstate highways that is badly needed in this country is found in the highway studies of the Delaware Valley Council, an agency set up to serve the metropolitan region including Philadelphia, Camden, Wilmington, Chester and Trenton. Those cities are located in three states and yet all have common highway problems needing the closest type of coordination.

The council's latest plan was prepared by an advisory committee drawn from top highway and traffic engineers of the states of Pennsylvania, Delaware and New Jersey. It relates only to major trunk highways, proposing a long-range program for the construction of 637 miles of limited-access highways costing over $1 billion.

In the past, too much planning, even for major highways, has been based on the needs of a particular state. This Delaware Valley planning has been conducted on a regional basis. Integrating such an overall regional plan with the highway program of each state should be a simple and logical second step.

One of First and Best

CHARLES B. SPENCER, who died last week, afforded one of the early examples of engineers forming their own construction companies. Not that there had not been engineers in the contracting business before, but there were few who had, or retained throughout their lifetime, such a truly professional attitude as did Charlie Spencer. No one thought more in terms of professional ideals or advancement than he. Add to this the fact that he always designed in terms of construction practicality, and the type of engineering that he personified was of the very best.

But Charlie Spencer had another attribute that made him worth emulating—an insatiable desire to work out solutions of difficult construction situations in some new or untried way. Many times these problems were completely extraneous to his own business, as in offering a suggestion to arrest the settlement of the Leaning Tower of Pisa. He was a frequent contributor to this journal, and always with something that he hoped would advance the practice of construction engineering. Charlie Spencer will be missed, but he left a legacy in the way he used his engineering talents, which it is hoped many young engineers of today are prepared to utilize.

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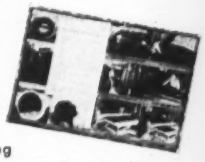

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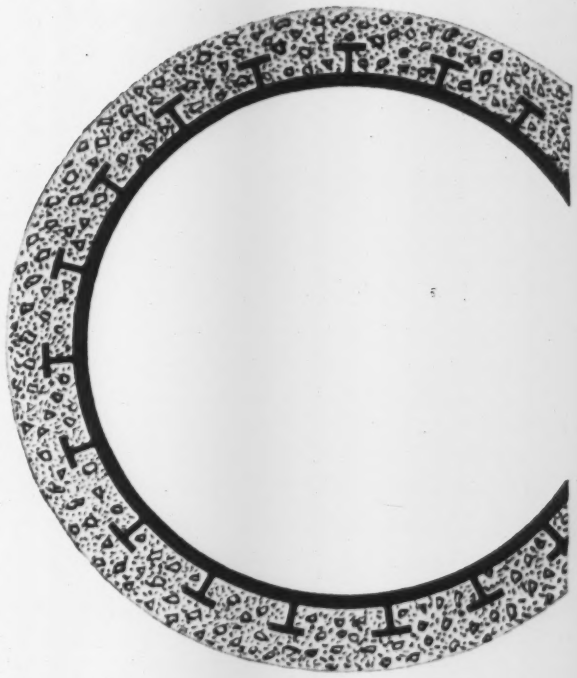

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